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CONTENTS

	PAGE
Editorial Notes	169
Liberal Views on Transport	171
A Subsidy for the S.N.C.F.	171
The Design of Plant for the Pressure Treatment of Timber	172
South Australian Railways	172
The Output of Railway Ton-miles	173
Letters to the Editor	174
The Scrap Heap	175
Overseas Railway Affairs	176
Brown Coal for Victorian Railways Locomotives	178
Transformer Trolleys for British Railways	179
The River Wye Bridge at Chepstow	180
Relay Interlocking in Germany	182
Railcar Repair Depot at Bordeaux	185
Personal	187
Queen Street, Glasgow, Accident Report	190
New Western Region Exchange at Swindon	193
Contracts & Tenders	193
Notes and News	194
Railway Stock Market	196

Labour and Re-Nationalisation

THE interim statement of the Labour Party home policy, "Facing the Facts," issued earlier this week, could hardly have omitted reference to the re-nationalisation of the industries which the Government intends to return to private enterprise, more especially in view of repeated threats by the Party since it has been in opposition that it would do so if returned to power, in some cases without further compensation to the owners. Re-nationalisation is referred to in the interim statement—with a significant difference. Whilst deprecating Conservative plans for restoring road haulage and steel to private ownership, the statement declares that Labour pledges itself to re-nationalise those sections of the transport and iron and steel industries which are sold to private buyers "wherever the public interest requires." What this means is not clear, but read in conjunction with an acknowledgement that in nationalisation of the basic industries "some mistakes were inevitably made," it may point at least to some misgivings and to a desire for a way of escape in the event of return to office. Nor is there any reference to compensation for owners if the industries were

nationalised for the second time. There is no further mention of transport as such. Managements and workers in nationalised industries are urged to increase output and raise productivity, and it is recommended that joint consultation in such industries should serve as an example to industry as a whole. The statement, however, goes further than previous declarations by the Labour Party in stressing the necessity not only of hard work but of doing without consumer goods and services so as to build up the industries of this country—in the light of which the denunciation of cuts in the social services is disappointing. The statement contains no precise proposals, doubtless because the Party is not yet ready with its programme. More concrete proposals may emerge from the Labour Party annual conference at Morecambe at the end of next month.

Dr. H. E. Moore

THE contribution to both the medical and the railway professions made by Dr. H. E. Moore, whose death is recorded elsewhere in this issue, though fully recognised only in recent years, will long be remembered both in the railway profession and by those who benefited from his services as Civilian Adviser in Rehabilitation to the R.A.F. and the Royal Navy. Dr. Moore, who retired three years ago as Surgeon to the Railway Accident Hospital at Crewe and Acting Chief Medical Officer of the London Midland Region, had been L.N.W.R. and L.M.S.R. Surgeon at Crewe since 1922. From the beginning he set about improvements in the casualty work and traumatic surgery carried out at the hospital and, after special study with a small number of cases, introduced his new ideas of active rehabilitation and movement, which did so much to reduce hardship and restored so many railwaymen to a fully active life. Dr. Moore's achievements in the orthopaedic sphere, which were more widely known, also have their place in the history of medical science and a biography and appreciation of his achievements appear in our Personal columns this week.

The "Golden Arrow" Retimed

THE "Golden Arrow" Pullman service between London and Paris, dating from 1929, with special steamer, has always involved a forenoon departure from Victoria with travel via Dover and Calais. The rearrangement in the winter timetable of the southbound "Golden Arrow" with an early afternoon departure from London and an afternoon sailing from Folkestone to Calais by the French National Railways ss. *Côte d'Azur* is a break with a 20-year tradition, a radical alteration which has been dictated by operating considerations in France. The northbound "Golden Arrow" will remain basically as before, with crossing from Calais to Dover by British Railways ss. *Invicta*, the ship which now maintains the "Golden Arrow" service in both directions. The trains on the French side are to be composed of the latest stock. The name "Golden Arrow" is to be reserved for the afternoon service from London with the Pullman connection from Calais to Paris; its retention for the morning service from London, which will include Pullmans from Victoria to Dover and continue to connect with international services to the Riviera and elsewhere, perhaps could hardly be justified without Pullman facilities beyond Calais. Routing via Folkestone-Calais will increase the journey time of this service from London to Paris from under seven to over 7½ hr.

Another Brunel Masterpiece

FOR pioneering ingenuity and originality in design, few if any bridges equal Brunel's remarkable structure built for the Great Western Railway over the Wye at Chepstow and completed just 100 years ago. He had to contrive a superstructure capable of being erected across a 300-ft. navigable channel without falsework and with no more than one tide's interruption to navigation. Other considerations were a 40-ft. rise and fall of spring tides and a strong current. His solution of the problem was

twin truss spans, one for each track, embodying 9-ft. dia. wrought-iron cylindrical compression members, which were erected on shore, floated across the channel and then lifted, one end at a time by stages, through a height of well over 100 ft., without modern appliances. The chains and continuous roadway girder and other work were erected piecemeal. The experience so gained in design and erection proved invaluable to him later in the construction of the 455-ft. spans of the Royal Albert Bridge at Saltash. It is a fine tribute to the design and workmanship at Chepstow that the main-span trusses are still in good condition and carrying modern traffic. The bridge is described elsewhere in this issue.

American Railway Safety

SOME interesting figures were published recently by the U.S.A. Interstate Commerce Commission, in the *Monthly Comment* of its Bureau of Economics & Statistics, on the safety of passenger travel by rail and air. Fatalities to passengers on railways during 1951 worked out at an average of 4.16 to every 1,000 million passenger-miles, compared with 5.57 in 1950, and 0.91 in 1949, a year with an exceptionally low accident rate. In the air, the average casualty rate per 1,000 million passenger-miles was 13 in 1951, 11.5 in 1950, and 13.2 in 1949. An average of both modes of transport over the three years shows an advantage of more than $3\frac{1}{2}$ to 1 for railway travel. Further data were presented in the same issue on the casualties to railway employees. In 1951 the fatality rate was 0.140 to every million man-hr. worked, slightly higher than the figure of 0.132 in 1950, but lower than in any other year from 1941 to 1951 inclusive, when the rate varied from 0.141 in 1949 to 0.283 in 1942. The American railways devote much organisation and propaganda to ensuring greater safety of both passengers and railway personnel, and it would appear to yield results.

Train to Trackside Communication

THERE is a difference that must seem astonishing to those outside the railway industry between the means normally provided for communication between moving trains and lineside points, and those which are insisted on at sea and in the air. A system now widespread on the Pennsylvania Railroad avoids difficulties of interference with other services, and the interruptions by tunnels, cuttings and bridges to which ordinary radio is subject, by using an inductive link between trains and existing lineside wires. With nearly 1,300 of these so-called trainphone units in service on trains and in signal boxes along about 2,000 miles of line, the Pennsylvania now claims to operate the largest train communication system in the world. Messages are exchanged between trains and signal boxes, between trains moving in the same area, and between engine crew and guard of individual freight trains. Passenger trains have the trainphone on the locomotive only. While not replacing any other means of communication, signals or other operating and safety devices, the trainphone has been found helpful in supplementing all of them. It contributes materially to improved efficiency by avoiding and minimising relays, and enabling crews to report and act upon unusual circumstances affecting train operations before trouble can develop.

Double Rubber Cushioning Pads in Tunnels

FUMES and dampness have been for many years a serious problem in two tunnels, 2,431 ft. and 1,198 ft. long, within three miles of each other, near Leeds in Alabama on the Central of Georgia Railway. Such excessive corrosion occurred in all the track steelwork that the average life of the rails and fastenings was only about three years. Since 1930, when the rails were butt-welded into 1,404 ft. and 1,287 ft. lengths, rails have been renewed once in seven years. There remained serious soleplate cutting of the sleepers, which had to be replaced every 14 years. To reduce this mechanical wear and also electrolytic action in the steelwork, enhancing corrosion, specially-designed

rubber pads have been inserted between both the sleeper and soleplate and soleplate and rail. The lower or anchor-seal pads are flat and $\frac{3}{8}$ in. thick; thinner pads can be used on more elastic formations. The upper or rail-abrasion pads are moulded with $\frac{3}{8}$ -in. \times $\frac{3}{8}$ -in. flanges to fit over the soleplate, and so prevent longitudinal movement with the rail. As they also fit closely between the shoulders of the soleplates, no transverse movement is possible. These pads were installed when relaying took place late last year, hastened by over 30 incipient cracks between head and web having been disclosed by Sperry detector car.

End-Hardening of Rails

THE demand for end-hardened rails seems to be increasing almost to standardisation in the United States. The rolling mills have already installed extensive equipment, and for hardening in the track portable plants are being used, and in some cases devised by individual railways. One of the largest mills, which put down its first end-hardening battery about six years ago, now has four in service, capable of treating about 75 per cent. of its total rail output. A fifth battery is also planned to enable almost the whole output to be end-hardened. On grounds of economy and to hasten end-hardening in the track, the Great Northern Railway engineers have devised a light tubular-frame mounting for carrying the necessary baffle-boxes along the track. Immediately behind a hand-propelled material trolley carrying the oxygen and acetylene containers, the baffle-box carrier is similarly pushed by two men, who can also lift it easily clear of the track. The baffle-boxes are mounted on a transverse see-saw secondary frame enabling one to be lowered over a rail at a time. Each baffle-box contains two fire-bricks, which, when the box is lowered, rest on the rail-table, leaving $2\frac{1}{2}$ in. of each rail exposed for hardening with a welding torch, fed through flexible tubing from the containers.

A Case of Brake Failure

THE accident at Queen Street High Level Station, Glasgow, on November 14, 1951, when a main line engine running light, tender first, to the terminus got out of control and collided violently with a rake of empty vehicles, was due to an unusual type of brake failure. As will be seen from our summary of Brigadier C. A. Langley's report, two defects were discovered in the engine equipment. The hose pipe connecting the vacuum chamber pipes on engine and tender had become worn through by rubbing against a lug on another pipe. Someone unknown had noticed this possibility and endeavoured to improve matters by attaching a protecting plate round the pipe, but this also had been worn away. In addition, a spring was missing from a valve in the ejector, but how this came about could not be established. The lessons of the accident were plain to learn, however, and more satisfactory instructions touching the inspection of these important parts of engines have been issued. It is to be hoped they will be carefully enforced. The driver had no reason to doubt the brake when he left the depot and was taken completely by surprise.

"Austerity" Tank Locomotives

THE order for 37 of the so-called "Austerity" 0-6-0 saddle tank locomotives which, as recorded in our July 25 issue, has been placed by the National Coal Board with the Hunslet Engine Co. Ltd is probably the largest single "industrial" order ever placed in Britain under peacetime conditions. With these 37 units plus another 12 already on order at the same works, it seems clear that the Board has abandoned any idea of developing a new standard design of its own for the heaviest shunting power, for delivery is to be spread over five years and should meet most commitments for this general size over that period. If this is so it reflects credit on the Board's engineers, for a new design would simply have added one more to the number of existing types for which spares have to be stocked. Already there are something like

70 of the "Austerities" at work round N.C.B. pit heads, marshalling trains up to 800 and 1,000 tons weight; and there are 75 on British Railways. Originally evolved by Hunslet for the Ministry of Supply during the war by modifying a 1939 standard to economise in materials then in short supply, and to cut down substantially the number of man-hours needed for production, over 400 of these locomotives are now in traffic; but the new N.C.B. machines are to have several pre-war features and materials, and so are tending to "non-Austerity."

Liberal Views on Transport

THE Liberal Party last week issued its transport policy largely in the form of proposals for amending the Transport Bill. Because of dissatisfaction with the Bill, a committee of five, none with professional experience as transport employees or operators, was set up to make recommendations to the Party. The Chairman was Mr. Arthur Holt, M.P. for Bolton West; the committee is stated by the Party to have been assisted by transport experts who for professional and other reasons cannot allow their names to be published. The statement embodies the findings of the committee.

The most noteworthy feature of the Liberal Party statement is its demand for a very wide measure of *laissez-faire* in transport. The choice, it is said, lies between a public monopoly of transport for its own sake or "a genuinely competitive system with public ownership and control only where the alternative is a private monopoly. We are firmly in favour of a genuinely competitive system." Referring to the scheme to be submitted by the British Transport Commission for the decentralisation of the railways, the Liberal Party states that it welcomes such measures but considers that the scheme could be presented in three months. The Commission should, however, consider giving "each Regional Authority some real measure of responsibility for the financial success of its own trading by permitting it to fix and adjust charges within certain fairly wide limits and produce its own balance sheet—as a subsidiary of the Transport Commission." Whereas the Government proposes decentralisation only in the provision of railway services, there must be some real measure of decentralisation or responsibility for charging as well as for the financial results achieved. There should be no implied obligation on any statutory body or undertaking to operate transport at a loss; losses on unremunerative railway or other services required for strategic or development purposes should be covered in the appropriate Departmental vote. It is stated, however, that provided the railways are permitted to charge the appropriate economic prices for all freights, "we do not consider that their continuance as common carriers places an unfair burden upon them in relation to road transport."

The London Transport Executive should be separated from the B.T.C. and made an independent statutory body—presumably with wide powers in fare fixing. After disposal of the Road Haulage Executive undertaking, what is left of the Commission's activities, apart from London Transport, might, the Party statement suggests, be re-named the British Railways Commission; all the other Executives would be abolished. The Railways Commission would be charged with running the railways and their auxiliary undertakings, including, it seems, the road haulage undertakings owned by the railways at the time of nationalisation, and the former railway-owned docks and hotels, and, perhaps, canals.

The levy on road transport, proposed in the Transport Bill to compensate the railways for losses resulting from the road haulage denationalisation is condemned. The Liberal Party cannot find any evidence to indicate that railways must inevitably run at a loss when in competition with road transport, "provided the railway organisation is radically altered and the conditions under which it has to work brought more into line with those of a commercial organisation." If the railways are an outmoded form of transport, then "we fail to see how the country's interests are served by continuing them permanently in existence

by means of a subsidy provided from road transport." The levy is, at the best, ransom money imposed arbitrarily on a section of the community. If the Transport Bill is to do what presumably its authors desire, the community will benefit, and if there is a loss, the community should stand it. The Party eventually would abandon the "A," "B," and "C" licensing system altogether, and maintain only a system requiring a certificate of fitness for each haulage vehicle. The present heavy taxation on road vehicles should be reduced, as soon as the economic situation permits, "to an amount which would put road and rail on a fair basis as far as their obligations to meeting the appropriate capital and maintenance costs of roads (or tracks), etc., are concerned." In road passenger transport, the statement advocates an inquiry into the present licensing system with a view to a greater measure of genuine competition.

There is an astonishing absence in the statement of any reference to means of dealing with the catastrophic effects of implementing the Liberal Party proposals. No mention is made, for instance, of the amount of road construction which would be necessitated by the resultant transfer of freight from rail to road. Nor does the Party recognise the vital role of the railways in moving tonnages far beyond the capacity of any road system conceivable in any but the remote future. The questions of rates and fares and of private monopolies are barely touched on, and there seems to be no awareness of the consequences of the lifting of controls—despite the references to fixing charges "within certain fairly wide limits." The suggestion that the Regional Authorities of the Railways Commission should operate railways and auxiliary services with wide local autonomy, and with steps taken, as was done before the war, to co-ordinate the various services within the framework of railway ownership, has much to recommend it, but like the rest of the proposals, it is too vague in its present form to bear examination.

A Subsidy for the S.N.C.F.

FROM the outset the French National Railways, like British Railways, have had the responsibility of balancing their budget, but, in practice, wartime and post-war inflation have made this impossible, and a new formula has been sought. The French Government now proposes to grant a subsidy to the S.N.C.F. to reduce the annual deficit, estimated to be some Fr. 90,000 million (£90,000,000) for 1951. To compensate the S.N.C.F. for charges which have not to be met by the road transport industry, the State will pay to the S.N.C.F. annually the equivalent of 60 per cent. of the renewal and maintenance expenditure of the permanent way, plus 50 per cent. of the costs of operating level crossings, provided that the total sum handed over does not exceed 12 per cent. of the total operating expenditure. For 1952 the operating expenditure will reach approximately Fr. 500,000 million (£500,000,000) and the State payment to the S.N.C.F. in respect of this year would therefore be limited to Fr. 60,000 million (£60,000,000). Conversely, the S.N.C.F. is called on to make a payment to the State in 1952 equal to 2 per cent. of its operating receipts, this percentage rising each year by 0.5 per cent. to a maximum of 5 per cent. in 1958.

For the present year the amount paid over by the S.N.C.F. would be about Fr. 9,000 million (£9,000,000). The gain to the S.N.C.F. would therefore be approximately Fr. 51,000 million (£51,000,000). The State would undertake to relieve the S.N.C.F. of its pension obligations in respect of members of the staff who have retired since January 1, 1949, amounting at present to approximately Fr. 12,000 million (£12,000,000). These measures, which the Minister of Public Works & Transport is expected to enact by decree in the immediate future, are based, to some extent, on the recommendations of the Methods of Communication Committee, to which we referred in our April 25 issue.

The financial situation of the S.N.C.F. is indeed critical, but one may perhaps wonder whether a subsidy, particularly on the lines proposed, is likely to promote its long-term efficiency. The greater the operating costs of

the S.N.C.F., the larger will be the payment by the State, and the lower the receipts, the less the payment by the S.N.C.F. A subsidy is always of doubtful value; at first sight, that suggested seems more than usually to lack a sound basis.

The Design of Plant for the Pressure Treatment of Timber

AT the Annual Convention of the British Wood Preserving Association held at Queens' College, Cambridge from June 23 to 25, 1952, two of the dozen papers discussed were of more than usual interest to railway engineers. Paper No. 9 entitled "Plant Design and Layout—Pressure Treatment" was contributed by Mr. W. Rothwell, London Midland Region, British Railways, and No. 12 covered "Problems of Rail Sleeper Preservation in Australia."

In his paper Mr. Rothwell advocates a plant layout in which each section is proportioned to the others to insure their working in step, and one that by giving reliable and lasting service will keep down maintenance costs. Other major aims should be to reduce running expenditure by employing the minimum of labour, and by insuring that production costs and technical requirements of treatment schedules can readily be computed. A new plant should be designed so that construction can be planned in progressive stages.

A diagram shows the various stages in a treatment plant and the operations linking them. The first operation is unloading from rail or road, carrying and stacking, generally for the seasoning period. A number of handling devices varying from overhead gantries to forklifts are recommended for this operation. Unless the timber to be treated is pre-seasoned or unless the kiln-seasoning process is used, a typical plant with a capacity or throughput of, say, 60,000 cu. ft. a week will require a stacking and/or seasoning accommodation for 1,560,000 cu. ft. of timber. For pre-seasoned material stacking for only about four days' throughput will be necessary near the treating cylinders. All stacks should have concreted or creosoted bases, raised above the ground and well-drained, they should also have ample clearances round them, be under roofing, and be marked to facilitate their being picked up in proper rotation. A plant of the above capacity will cover 15 to 20 acres and be served by 2½-3 miles of track.

The next operation is the transfer from stack to treating cylinder or to the saw-mills, adzing, boring, incising or other machines first, a tramway generally being used for the purpose. Here two alternatives are posed, (a) to use the same gauge as that running into the treating cylinders, or (b) to confine that gauge to the immediate vicinity of the cylinders and serve the remainder of the plant with a standard or other gauge tramway. The particular material and operations undertaken by the individual plant will decide his point. There is, however, a further alternative in a large plant of using standard gauge trams in the cylinders and throughout the plant. The number and size of the cylinders will depend on the average time for the treatment cycles to be used, which in turn varies with the type and size of the timber to be treated. In all cases the gauge of the tramway in a cylinder should be less than half its diameter, so as to reduce to a minimum the "dead" area beneath the tram. The minimum diameter for a cylinder to take a 4 ft. 8½ in. gauge tramway is 8 ft.

An up-to-date plant should provide for treatment by any of the modern processes, namely full-cell, empty cell both Lowry and Rueping systems, with facilities for pre-steaming if water-solubles are to be used. Though it is extensively used on the North American Continent for treating green timber, the Boulton or boiling-under-vacuum process is not considered in the paper as much greater cylinder capacity would be necessary than in the contemplated plant, owing to the long cycles required.

Three interesting graphs are reproduced showing pressure (including vacuum) plotted against time at each stage

of treatment in hours, for the full-cell, Lowry, and Rueping systems, respectively. Another diagram explains the services required for these treatment systems. Here the first consideration is the size of the cylinder to be used. As already implied this may depend on the gauge of the tramway entering it. Consideration has also to be given to the fact that a relatively small proportion of the cross-sectional area is occupied by the load of timber on the tram; with a load of 10-in. × 5-in. sleepers in a 6 ft. 6 in. or 7 ft. dia. cylinder on a 3-ft. gauge tramway this proportion is only about 55 per cent., and the percentage falls if larger sections of timber and especially rounds are loaded. The length of the treating cylinder should be at least 12 times its diameter. The number of doors required depends on whether the timber is being processed or not.

The pressure cylinders and methods of providing pressure and vacuum in the various processes is finally discussed, but as the author remarks "the design of the steam plant would merit a full paper to itself." Advocating efficiency and economy in all operations, he mentions the use of lagging wherever possible, pre-heat for boiler feed-water, and thermostatic controls.

South Australian Railways

THE report for the year ended June 30, 1951, of the Railways Commissioner, South Australia, Mr. R. H. Chapman, emphasises that the contribution of £1,800,000 by the State Government to working expenses and interest on capital, towards meeting increased costs not sufficiently covered by higher charges, was quite insufficient. No allowance, it is pointed out, was made for the rise during the year in wages and costs, which amounted to £1,377,441; there was also an unforeseen loss of revenue of some £600,000 caused by the strike. The year's operations resulted in a net deficit of £1,171,568.

The principal results for 1949-50 and 1950-51 were:—

	1949-50	1950-51
	(Thousands)	
Total train-mileage	6,355	6,380
Passenger journeys	17,385	17,178
Goods gross tonnage	3,715	3,816
	(£ thousands)	
Coaching receipts	1,378	1,418
Goods receipts	4,637	5,335
Total receipts	6,549	7,358
Total working expenses	8,272	9,793

Freight rates were increased on September 1, and passenger fares on October 1, 1950, on the basis of producing £1,000,000 additional earnings for a full year, or about £750,000 for the year under review. The increase in the total cost of wages and materials in 1950-51 compared with 1937-38 was £5,415,514. During the same period, increases in rates and fares amounted to some £1,500,000 a year. In such conditions, the report states, heavy subsidies from the Treasury are necessary to balance the railway accounts.

The increased revenue reflects the increase in business handled during the year as well as the increases in freight rates and fares. There was a considerable increase in freight movement between the States, but partly on account of the restrictions on rail transport in Victoria and New South Wales, much of this was conveyed by road. The loss to the road is attributed to some extent to the present intersystem freight rate structure which opens the door to road competition for the transport of goods of a solid, compact nature, while leaving to the railways the unpayable light, bulky freight. This state of affairs is being met by arranging contracts with an increasing number of railway customers for the conveyance of their goods in wagon load lots.

Although passenger journeys decreased, it is estimated that there would have been about 18,300,000 journeys had there been no strike. The report states that the increase in passenger business during the year was not commensurate with the increase in population, because of the continued increase in private motoring. The fleet of sleeping cars running between Adelaide and Melbourne in the "Overland" was increased, and mention is made of the present diesel haulage of this train over the S.A.R.

Reference is made to wholly inadequate supplies of locomotive coal from New South Wales, of worse quality than hitherto. It was only possible to maintain train services by the continued and increasing use of fuel oil and of subsidised black coal imported from overseas. As the locomotives of the S.A.R. and of most Australian railways are designed to burn high quality coal, the vital importance is stressed of producing adequate quantities of coal of sufficient quality for the railways.

To deal with increased Leigh Creek coal and concentrates on the Peterborough division, an order was placed with Beyer, Peacock & Co. Ltd. for ten 3-ft. 6-in. gauge Garratt locomotives of 43,000 lb. tractive effort, the delivery of the first of these being expected before the end of 1952. The report refers also to the placing in service of the ten 1,760-h.p. main-line diesel-electric locomotives with motive power equipment supplied by the English Electric Co. Ltd., and to supply of ten 5-ft. 3-in. gauge 600-h.p. diesel-electric engines for shunting and transfer work in and around Port Adelaide. The first of the 21 diesel engine sets obtained from Great Britain for mounting in the railcars in place of the then existing petrol engines was installed, complete with fluid drive, and work on the remainder was in hand. No equipment had yet been received from the U.S.A. for railcars for country services. During the year 202 broad-gauge freight vehicles were placed in service and work was in progress at Islington Workshops on a further 558. Contracts were let for supply of 100 broad-gauge cattle vans and 20 narrow-gauge hopper cars, and additional containers for the Adelaide and Sydney service were delivered. Tenders were called for supply of 410 broad- and 100 narrow-gauge wagons.

Standardisation of gauges in New South Wales, Victoria, and South Australia, is advocated by Mr. Chapman on economic, in addition to strategic grounds. In the work of changing over the gauge in the South-East from 3 ft. 6 in. to 5 ft. 3 in., arrangements are being made in S.A.R. yard designs and all other constructional work to reduce the cost of the final conversion to 4 ft. 8½ in. to a minimum.

The reports of the Public Works Standing Committee on proposals to electrify the Adelaide suburban lines and to build and electrify a new line from Adelaide to Glenelg were awaited.

The Output of Railway Ton-miles

(By a Correspondent)

THE Association of American Railroads is confident that last year's efficiency record of the U.S.A. railways was the best in their history. It will be instructive to compare the freight traffic statistics supporting this claim with the corresponding results from our railways. As the British Transport Commission's 1951 report contains a number of diagrams showing the trend of developments between 1938 and 1951, the table below has been prepared to contrast the progress made in the output of ton-miles during that period of 14 years on British Railways and on the privately managed lines across the Atlantic.

Statistic	British Railways			U.S.A. Railways		
	1938	1951	Increase per cent.	1938	1951	Increase per cent.
Net ton-miles (millions)	16,673	32,202	37	316,910	678,904	114
Net ton-miles per mile of road per day	2,290	3,241	41	3,742	8,270	121
Wagon load (tons)	5.6	6.9	23	26.1	33.0	26
Number of loaded wagons per train	22	23	4.5	47.1	60.0	27
Train load (tons)	125	162	29	759	1,301	71
Freight train speed (m.p.h.)	9.15	8.30	D 9	16.6	17.0	2.4
Net ton-miles per freight train-hr.	968	1,107	14	12,473	21,767	74

In the calculations which follow, allowance has been

made for the short ton used in the U.S.A. statistics. On a comparable basis, the U.S.A. ton-mileage was 16 times the British total in 1938 and 26 times that total in 1951. The second entry in the table means that the U.S.A. railway traffic was 1.4 times as dense as ours in 1938 and 2½ times as dense last year.

The next four items prove that the average U.S.A. freight train has outstripped the British train in size and, what is more remarkable, in speed. The last statistic in the list is regarded by competent authorities as a reliable measure of the output of freight train working, though the Americans compile also "gross ton-miles per freight train hour" because that average combines the speed factor with the total weight of the train behind the locomotive. Expressed in net ton-miles, the hourly output of freight train operation in the United States was 11 times the British output in 1938 and was 17½ times that output in 1951.

The growth in productivity of the U.S.A. railways as freight carriers rivals the increase in the efficiency of steel-making, which was the subject of an editorial in our issue of July 4. Yet 1951 was not an easy year in the States. One handicap was the inability of the railways to obtain delivery of new wagons owing to shortage of steel. Another problem was the financing of large betterment programmes, designed to effect economies, at a time when net earnings were low.

Despite these difficulties, the U.S.A. railways strove to meet all requirements for service through organised co-operation. A typical incident was their success in moving a record quantity of nearly 95 million tons of iron ore from the north-western ranges, partly by the Lake routes and partly by direct rail, to the iron and steel works. Optimists estimated that 100 million tons of ore would pass from the same sources this year, but strikes of steelworkers and iron ore miners in June and July stopped the despatch of some 20 million tons from the Upper Lake ports. At June 23 the all-rail movement to the steel plants amounted to 818,000 tons, compared with 2,936,000 tons to the same date last year, but will expand rapidly now that the labour troubles have been settled.

The U.S.A. railways are accustomed to cope with more violent traffic fluctuations than British Railways ever experience. The Car Service Division, Association of American Railroads, acts for all railways in these emergencies and never fails to produce a plan for dealing with an awkward situation. Once a month the Division publishes a bulletin which analyses the state of the wagon supply in relation to demands for rail carriage. From humdrum rolling stock records there emerges, month after month, an instructive outline of the transport position in the States. The bulletin is especially useful to the Shippers Advisory Boards, which confer with the railways about current requirements for wagons and warn them of possible developments to come.

This co-operative machinery works more systematically than any arrangements British Railways have for consultation with representative bodies of traders, and undoubtedly helps to swell the output of ton-miles, which on seven individual railways exceeds the production of our 19,350 miles of State-owned line. In order of productivity these railways are the Pennsylvania, New York Central, Chesapeake & Ohio, Union Pacific, Santa Fe, Southern Pacific, and Baltimore & Ohio. The longest of these lines is the Santa Fe with 13,100 miles; the shortest is the C. & O. with 5,040 miles, over each of which it worked 20,720 ton-miles per day last year. But the largest manufacturer of ton-miles is the Pennsylvania, turning out from its 10,040 miles of road more than twice as many as British Railways.

RAILWAY PHOTOGRAPHIC EXHIBITION.—A photographic exhibition organised by the Railway Correspondence & Travel Society, in association with the Railway Photographic Society, will be held at the Railway Executive headquarters, 222, Marylebone Road, N.W.1, between October 6-11. The exhibition will be open to the public daily from 11 a.m. to 8 p.m. and admission will be free.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Fastest Trains in Great Britain?

July 31

SIR,—On page 110 of your July 25 issue appear a photograph and details of the timing of the "North Briton," the Fastest Train in Great Britain," between Darlington and York. As a matter of interest, I would inform you that the 3.55 p.m. Newcastle-Birmingham train, due to depart from Darlington 4.48 p.m. and arrive at York at 5.31 p.m., pulled into No. 8 platform at York on July 24 at 5.27 p.m. The train had travelled between Darlington and York at an average speed of 67.8 m.p.h.

Yours faithfully,

B. W. SIDDALL

14, Manor Crescent, Pool-in-Wharfedale

U.S.A. Streamline Enterprise

August 3

SIR,—An editorial in your August 1 issue said that it was not so much a matter of how much money was lost in U.S.A. passenger operation as how much more might have been lost, but for the retention by high-speed diesel streamline trains of traffic which might have gone by air or road. It is difficult to reconcile this reasoning with the fact that in 1951 revenue from passenger train services, including receipts from mail, express and other sources, failed to meet the expenses which were related solely to the conduct of these services. When in addition expenses common to passenger and freight working were divided in accordance with the Interstate Commerce Commission's formula, the total loss on passenger train services became \$681 million, the highest figure ever recorded. Since 1939 the railways have withdrawn passenger services from 30,000 miles of road, but still lose money on that branch of business.

The Great Northern Railway's venture seems ill-timed. Last year its net railway operating income (earnings before charges) decreased from \$27 million to \$23 million. For the first five months of this year, these earnings decreased again by 15 per cent. In all probability freight revenue, which was 16 times the passenger revenue in 1951, will pay for the "Empire Builder." For the Great Northern is a freight road, running on an average only 4.3 passenger train-miles a day over 5,650 miles of its total mileage of 8,270.

Yours faithfully,

R. BELL

Frognal, N.W.3

Holyhead-Dun Laoghaire Service

August 12

SIR,—In view of what was stated in the editorial columns of your August 1 issue, I should like to point out that although it is not now necessary for persons travelling to and from Ireland to hold passports, it is still necessary for passengers to have their luggage examined by the Customs authorities at the departure and arrival ports.

At Holyhead the Customs examination room and the room which was used for the examination of passports are in one building, travellers entering at one end and leaving at the other. The end which was formerly used by the immigration authorities for the examination of passports is now used as the ante-room to the Customs examination portion, and people wait there before passing through for examination purposes.

Passengers are allowed to board the mail boat at Holyhead at 9 p.m. and this fact is stated in our timetable, where it is also mentioned that in exceptional circumstances the arrangement may have to be cancelled without notice. This facility has unavoidably had to be withdrawn on eight occasions this year.

To cater for passengers, consequent on the closing of the

hotel, a scheme has been approved and work is about to commence on providing a waiting lounge-buffet in the ground floor buildings of the former hotel premises. This lounge will be equipped and furnished to afford the greatest comfort possible to waiting passengers, and will be accessible from platforms and concourse where ladies' and gentlemen's lavatories are already available.

Yours faithfully,

J. W. TONGE,
Assistant Public Relations
& Publicity Officer

London Midland Region, Euston House, N.W.1

Running Through Curves

July 28

SIR,—The proposal to raise speeds on curved track in accordance with the upper curve of Fig. 2 on page 682 of the June 20 issue appears to me to invite difficulties connected with maintenance of the permanent way.

In running for example at 87 m.p.h. through a curve of 1,500 ft. radius with a maximum allowable cant of 6 in., the average lateral pressure at all tyre/rail contacts, due to unbalanced centrifugal forces, reaches 30 per cent. of the vertical load of the vehicle. With the errors in curve alignment which are present in even the best maintained tracks, and even if the carrying wheels of the railcars rotate



Proposed increased superelevation on gauntlet tracks for high-speed railcar

independently on their axes, maximum lateral forces may be expected to reach and exceed 60 per cent. of the vertical weight on a wheel pair, which will result in serious track distortion.

Special measures could be taken on curves to anchor the track to permanent foundations if economic justification were made and an alternative would be to provide increased superelevation for railcar traffic on gauntlet tracks as shown in my sketch.

Yours faithfully,

W. E. GELSON

1, Lygon Place, Grosvenor Gardens, Westminster, S.W.1

[Our contributor has replied that the curve referred to is considered as something that "should be aimed at with suitably designed railcars." As pointed out above, the lateral forces might be high in terms of percentage of vehicle weight, i.e. to make them tolerable the vehicle weight should be kept low, which is yet another reason for the wider development and use of lightweight rolling stock. High speeds might even call for hand-steering of axles through curves in the case of four-wheel, long-wheelbase railbuses. It is suggested that the Talgo train would meet all the requirements quite well.—ED., R.G.]

CHROMASTER INDUSTRIAL HARD CHROME PLATING UNIT.—Refrigerator Components Limited held a demonstration at Caxton Hall, Westminster, on August 12, of the Ward Leonard Electric Company, New York, Chromaster industrial hard chrome plating unit. The unit, which is used in conjunction with Chromasol solution, may be used for a variety of chrome plating; it has a simple operating procedure, which occupies only a few minutes, and considerable advantages are claimed for industrial production tools plated by this method.

THE SCRAP HEAP

Quieter by Train

Helicopter tests at the South Bank showed that when it was at 500 ft. the noise at ground level was equal to a train crossing the railway bridge 150 ft. away.—From *"The Daily Telegraph."*

"Oh, Mr. Porter!"

The traveller arriving in the boat train at Southampton is prepared to be tolerant about joining a long queue to go through the Customs. But apparently from time to time a porter takes it into his head to arrange for the holiday to start before his charges board the boat.

At any rate, one hears of a recent passenger's luggage being whipped up and borne towards the ship. "But I haven't been through the Customs yet," the well-trained owner cried. "Oh, that!" replied the porter, not halting in his stride. "That's a lot of bunk!" The passengers thereupon happily climbed the gangway with not a single hieroglyphic in chalk between them.—From *"The Manchester Guardian."*

Exceptional Out-of-Gauge Load

A Catalyst storage drum, 60 ft. long, 16 ft. 6 in. dia., and weighing 38 tons, was conveyed by British Railways, Southern Region, on Sunday, July 20, from the Charlton works of G. A. Harvey & Co. (London) Ltd. to Angerstein Wharf and floated thence down the Thames to the refinery of the Anglo-Iranian Oil Co. Ltd. at Grain.

A flatrol wagon was used to convey the drum from the firm's rail-connected siding to Angerstein Wharf and a Port of London Authority Levia-than floating crane lifted the drum from the wharf into the river. The overall height of the drum when loaded on wagon was 21 ft. 4½ in.

This consignment is the second to pass and two further drums are to be conveyed in the near future. The accompanying photograph enables a comparison to be made between the size of the drum and a class "C" (former S.E.C.R.) 0-6-0 tender engine.

Stealing a Train

The case was dismissed recently against the first man to appear in Vancouver police court charged with stealing a train. The charge read that he "unlawfully stole an interurban train to a value of over \$25, the property of the British Columbia Electric Company." He had intended to drive it the 12 miles from Vancouver to his home in New Westminster but was stopped after travelling only 10 blocks through busy streets.

Counsel said his client was drunk that night, and argued that no actual theft occurred. "The train was not removed from company tracks, nor was there any intention on the part of my client to remove it," he said.

"I do not approve of the snatching of trains," said the Magistrate. "However, I have no precedent on which to base a decision. Case dismissed."

Newhaven-Dieppe, 1852

On Saturday morning the Chairman, Directors and Officers of the Paris, Rouen, & Dieppe Railway left Paris by an express train, and reached Dieppe in three hours and a half; and on the same morning the Chairman and Officers of the London & Brighton Railway left London to meet them, by an express train, with which they reached Newhaven in less than an hour and a half. For the purpose of rendering the sea voyage as perfect as

possible, a new description of vessel was tried. . . . Instead of the close cabins in the hold the vessel carries her first-class passengers on deck in a large and luxurious saloon, surrounded with plate-glass windows, where they are thoroughly protected from the wind and waves, and yet enjoy an extensive view, having abundance of light and the most perfect ventilation. . . .

(The vessel was named *Wave Queen*, and crossed to Dieppe in 5½ hr. with a strong south-westerly breeze on the beam. With a favourable wind this time had been reduced by an hour.)—From *"The Times,"* August 9, 1852.

The Traveller

A young man of Thetford, Norfolk, works on a railway bookstall, but the only book he has taken on his holiday is a railway timetable. He hopes to beat his last year's record of 3,431 miles' travel in two weeks on a 20s. "runabout" ticket. This year, armed with two 20s. tickets, available for adjoining areas, he hopes to cover 4,000 miles.—From the *"News Chronicle."*

Side-Lines in Suburbia

We seldom see a famous train,
Unless there's trouble on the "main,"
And, then, it's really quite a "do"
To watch the "corridors" creep
through.

Sometimes a 4-4-2 slinks by,
Unhappily, self-consciously,
Muttering "If they must run me 'light,'
"Through here, why can't it be at
night?"

These big chaps have a wholesome
dread
Of busting up our ballast-bed;
A good job, too, for we weren't built
To take these titans at full tilt.

We could reveal a thing or two
To shake them up at Waterloo—
About the Stationmaster's beans
And what goes on at Mrs. Green's.

On washdays it is all too plain
Brown's shirt-tails have been patched
again
And we can safely diagnose
The stork has called at "*Mon Repos*."

The evening press would be hard hit,
If we forebore to do our bit
With small mishaps, on which they
thrive,
Reminding H.Q. we're alive.

But, when, in snow and fog and frost,
Buses and trams give up the ghost,
Who takes you safely up and down?
The little lines of London Town.

You say that traffic's pretty light
From ten till four—maybe you're right,
But stick around from seven till ten
And tell us how it strikes you then!

A. B.
D 2



Oil storage drum conveyed on flatrol wagon from Charlton to Angerstein Wharf for floating down the Thames to a refinery at Grain, Kent

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Railway Finances

In April, the first month of the current financial year, the operation of railway, harbour, steamship, airway, and aerodrome services resulted in a surplus of £341,688, mainly the result of increased receipts from railway and harbour services. The surplus on railway earnings was £240,956, compared with £1,040,221 for April, 1951; that on harbour services was £256,094 (£226,918).

NEW ZEALAND

Rimutaka Tunnel Progress

The total length of the Rimutaka tunnel so far driven is 6,750 ft. The completed length of the tunnel will be 5½ miles.

PAKISTAN

New Lines

The narrow-gauge section from Jacobabad to Kashmor, about 76 miles, on the North Western Railway is being converted to broad gauge. Its extension north *via* Dera Ghazi Khan as a broad-gauge line, about 196 miles, to connect with the Shershah-Kundian line near Kot Adu, after crossing the Indus, has been approved. The final survey is now in progress. The Jacobabad-Kashmor-Dera Ghazi Khan link has now been accepted by the Central Government as an essential route in the interest of the development of the country.

A broad-gauge line between Tando Mohammad Khan and Moghalbin, about 70 miles, in the Sind Province has been approved. This line is essential for the development of the area to be served by the Lower Sind Barrage.

The construction of a metre-gauge line from Sylhet to Chittack, about 20 miles, on the Eastern Bengal Railway has begun. A broad-gauge line from Jessore to Darsana, 43 miles, on the same railway, connecting the hitherto isolated Khulna-Benapol section, was completed and opened to traffic in June, 1951. Similarly, the Shaistaganj-Habibgunj and Amaura-Chapai-Nawabgunj sections, each about ten miles, on the Eastern Bengal Railway, which were dismantled during the last war, were restored in June, 1951.

Increasing Line Capacity

Schemes are in hand to improve the capacity of some of the sections on the Eastern Bengal Railway which are considered inadequate to cope with the increased or expected traffic. The metre-gauge single-line section between Akhaura and Ashuganj, about 17 miles, has been doubled, and the second line opened to traffic in June, 1951. The engineering and traffic surveys of three new lines have been completed. They

are: Gunjyal-Bhakkar (Punjab) 80 miles, Mardan-Charsada-Tanji Railway (North-West Frontier Province) 30 miles, and Dacca-Arisha Railway (East Bengal) 52 miles. The survey for a metre-gauge line from Chittagong to Rangamati (East Bengal), 48 miles, is in progress. It is proposed to undertake a survey for a broad-gauge line from Dera Nawab Sahib to Muzaffargarh *via* Punjnad in the Punjab.

UNITED STATES

Ignitron Electric Locomotive in Service

Working together as a 6,000-h.p. locomotive with multiple-unit control, the two ignitron rectifier units of the Pennsylvania Railroad have hauled a train of 162 loaded bogie coal wagons over the 130 miles from Enola marshalling yard to Morrisville, Pennsylvania. The gross weight of the train was 13,348 tons (11,918 tons of 2,240 lb.), and the run was made at an average speed of 30 m.p.h. Up a long 1 in 350 gradient the speed was 24 m.p.h. Compared with one of the standard "GG-1" class Pennsylvania electric locomotives, which have the 2-Do-Do-2 wheel arrangement, and weigh 205 tons (of 2,240 lb.) apiece, the twin ignitron locomotives weigh 331 tons. On this run the ignitron locomotives displayed a haulage capacity of 400,440 ton-miles per train running-hr., compared with the 163,905 ton-miles of the 2-Do-Do-2.

A New Baltimore & Ohio Tunnel

On June 16 a new double-track tunnel was opened by the Baltimore & Ohio Railroad through the Western Virginia mountains near Clarksburg, constructed at a cost of roughly \$4,000,000. It replaces an old single-line structure, on one of the two principal B. & O. main lines—that between Washington, Cincinnati and St. Louis—which has been in use since 1853, and with a width of 31 ft. and a height of 28 ft. now provides for a double track.

The new tunnel is 3,300 ft. long. In its location opportunity has been taken to eliminate two reverse curves that led to the old tunnel. This is one of the most heavily-trafficked sections of the B. & O., and in conjunction with the centralised traffic control installed recently between Grafton and Parkersburg, the new tunnel will aid considerably the movement of trains.

"Kansas City Zephyr"

On the completion of its Brookfield cut-off, the Chicago Burlington & Quincy Railroad intends to put into daylight service a new streamline train, with diesel haulage and dome cars, called the "Kansas City Zephyr." This cut-off is being laid out for speed and will greatly improve Burlington facilities between Chicago and Kansas City.

At present the principal passenger service between Chicago and Kansas City is provided by the Atchison Topeka & Santa Fe, over its 451-mile route; there are three day and five night streamline services in each direction, of which the fastest is the west-bound day "Kansas Cityan" in 7 hr. 25 min., and the corresponding east-bound "Chicogean" in 7½ hr. The schedule of the Burlington "Kansas City Zephyr" is not yet announced. Passenger service between the two cities is also provided by the Chicago Rock Island & Pacific Railroad, but over this route, 495 miles long, the times are considerably slower.

MEXICO

Swiss-built Streamline Coaches

What are probably the first passenger coaches to be built in Switzerland for use on the American Continent are now being built by the Schindler Wagon A.G., of Pratteln (Basle), to the order of the National Railways of Mexico. These coaches, 27 in number, are to be used to form a new and more commodious "Aztec Eagle" streamline service between Laredo, Texas, U.S.A. (where they will connect with the "Texas Eagle" of the Missouri Pacific) and Mexico City, 802 miles.

Three train sets are required to maintain the service, and each will consist of baggage and mail car, chair car for short-distance journeys, two reclining chair cars, dining car, three sleeping cars, and bar-lounge-observation car, all air-conditioned except the chair car for short journeys. The dining and sleeping cars will be staffed and operated by the Pullman Company. The connecting times at Laredo will remain unchanged, at convenient daylight hours (about 4.30-6 p.m. southbound and 8-9 a.m. northbound), but there will be initial accelerations of 3-3½ hr. in Mexico.

SWITZERLAND

French-Swiss Passenger Services

In June a conference was held at Neuchâtel, attended by representatives of the Swiss Federal Railways, the French National Railways, the Burgomaster of Neuchâtel, and other interested authorities, to discuss the possibility of improving the train services between Paris and Switzerland *via* Pontarlier and Les Verrières. At present through coaches are provided in each direction between Paris, Neuchâtel, and Berne by this route, both by day and night trains.

Sufficient advantage is not taken of the high speed electric service of the S.N.C.F. between Paris and Dijon, for although this 195-mile portion of the journey is completed in from 3 to 3½ hr. by the trains concerned, the remain-

ing 152 miles between Dijon and Berne require from 5½ to 6 hr., including from 40 to 70 min. on frontier formalities. A proposal for immediate consideration was the provision of a sleeping car between Paris and Berne on the night service in each direction. It was hoped by the Swiss that the S.N.C.F. would early consider electrification of the line from Dijon to both Vallorbe and Les Verrières, so linking up with the Swiss electrified system.

Another interesting proposal was for a fast railcar service between Lausanne, Vallorbe, and Dijon, linking at Dijon with the fast service to and from Paris, and much accelerated communication to and from the Lake of Geneva area. This proposal is to be carried out when the French winter timetable comes into force in October. There will be a special fast service from Paris to Lausanne and Geneva via Dijon. Travellers leaving Paris at 6.25 p.m. will change at Dijon to a fast railcar, reaching Lausanne at midnight and Geneva at 1 a.m. On the return journey the railcar will leave Geneva and Lausanne early in the morning to connect at Dijon at 11 a.m. with an express reaching Paris at 1.35 p.m.

FRANCE

S.N.C.F. Results in 1951

The report for 1951 of the Board of the S.N.C.F. shows a deficit of 88,000 million francs (about £88,000,000). In a review of the railway situation the report stated that 1951 had been a year of progress in operating and technical results, but also of some disappointments. Commercial traffic at 73,500 million km. units was a record; passenger traffic equalled that of

1929, the best year in French railway history, and goods traffic exceeding that year's record by 8.6 per cent. While industrial production rose 44 per cent. compared with 1938, goods tonnage rose only 33 per cent. Passenger km. increased 27 per cent., a figure far short of the general development of travel in France.

The report maintains that equitable road/rail co-ordination depends on tariff policy adapted to cost prices and coupled with co-ordination of investments. Rail traffic tends to become increasingly less profitable and more dependent on fluctuations in general trade activity; therefore, in a period of general economic prosperity, tariffs should be slightly higher than cost prices so that a reserve fund may be formed for adjustment of railway finances in times of depression.

WESTERN GERMANY

Grossenbrode-Gedser Ferry

Because of increased traffic, the train ferry between Grossenbrode, in Schleswig-Holstein, and Gedser, in Denmark, is running twice daily. The number of motorcars conveyed has much increased this summer.

Plans are stated to be under consideration for the routing of the "Nord Express" by this train ferry in the summer of 1953. The "Nord Express" and the other international expresses at present run between Hamburg and Copenhagen via Flensburg (frontier), Fredericia, the Little Belt Bridge, and the Great Belt (Nyborg-Korsør) ferry, which last conveys passenger rolling stock, including diesel trains. The Grossenbrode-Gedser ferry so far has conveyed only wagons; the passenger

day service between Hamburg and Copenhagen has been provided by a railcar between Hamburg and Grossenbrode and a steam train between Gedser and Copenhagen.

IRELAND

C.I.E. to Use Railbuses

C.I.E. is converting twelve buses to run on lightly-trafficked branch lines by fitting them with the successful Howden-Meredith patent pneumatic tyre introduced by the G.N.R.(I.) in 1933. In this the steel tyre is fitted outside the rubber tyre, which is formed with the usual ridges on its outer surface; into the grooves fit two annular projections of the inner surface of the steel tyre. The pneumatic tyre, when inflated, thus grips securely its outer steel rim, which is made slightly concave to suit the profile of the rubber.

The G.N.R.(I.) found that the track width of the standard road bus was nearly that of the broad-gauge (5 ft. 3 in.) track and little alteration in dimensions was needed. It was found that the cost of conversion was not more than £100. The railbus has proved a distinct success for its own special purpose on the G.N.R.(I.) but it is the first time that such vehicles have been adopted for use on C.I.E. lines.

Cocktail Bar Cars

The second C.I.E. buffet-car, No. 353, to be fitted with a modern-type cocktail bar, has gone into service. The first car to be so fitted, 2093, is now operating on the "Enterprise," as part of the new set of coaches now forming this train. A third buffet car is also being equipped with a cocktail bar.

Publications Received

Steam Locomotion.—Vols. I and II. By Edward Cecil Poultney. Edited by C. R. H. Simpson. London: The Caxton Publishing Co. Ltd., Morley Hall, St. George Street, Hanover Square, W.1. 9½ in. × 7 in. × 1 in. 339 pp. and 333 pp. respectively. Illustrated. Price 61s. 9d. (or 5s. on delivery and 10s. monthly until full price of 65s. is paid).—In writing these two volumes, which deal with the construction, working principles and practical operation of steam locomotives, the author has attempted to approach the subject from the point of view of drivers and firemen and maintenance staff. Technicalities entering into the subject of the design and proportioning of locomotives are largely avoided, though it naturally has not been possible to avoid all such references. The treatment of the subject is both thorough and practical.

Cells, Dry and Inert.—Le Carbone Limited has issued an illustrated booklet giving the principal characteristics and applications of dry and inert cells

for railway signalling work. The use of the firm's batteries on the Southern Region was described in our January 13, 1950, issue. The types of cells are listed for easy reference.

Codes of Practice for Gangers, Sub-gangers and Lengthmen. Published by the Railway Executive (British Railways) in April, 1952, for the benefit and guidance of the permanent way staff. 17 pp. 8 in. × 5 in. Paper covers.—In the foreword by Mr. J. C. L. Train, Member of the Railway Executive, it is explained that this book is a reminder to the staff of what must be done to obtain a high standard of track maintenance. Emphasis is laid on the necessity for effective drainage and for preventing the formation and ballast from becoming waterlogged. A further warning is that much depends on early attention to all track fittings that may work loose and cause deterioration in running or even danger. All the permanent-way man's duties are outlined and diagrams are included showing the standard structure gauge, sleeper spac-

ings with various kinds of track, aids to keeping joints square, and stringlining of curves. The practices to be observed in the wide variety of trackmen's work are thus set out concisely, and should prove valuable to the 50,000 members of the staff to whom the book has been issued.

Coal: The Price Structure.—This booklet, distributed by the Federation of British Industries, was prepared under the guidance of the Chairman of F.B.I. Solid Fuel Panel, to answer the many inquiries from members of the Federation caused by major changes in the structure of coal prices made by the National Coal Board since the war. The Panel agreed with the Coal Board that coal prices should relate more closely to value, and that distortions produced by successive flat-rate increases during the war should be eliminated in stages now completed. The Panel also discussed with the Coal Board the new price structure scheme, and a measure of agreement was reached on major issues.

Brown Coal for Victorian Railways Locomotives

Using increased output available from the State Electricity Commission

ENCOURAGED by the success of the experimental equipment of an "X" class goods locomotive to burn pulverised brown coal, the Victorian Railways decided recently to fit similarly one of the "R" class main line passenger locomotives. A plan is also being worked out to provide more locomotives with this equipment, as fuel supplies become available.

The State Electricity Commission in Victoria is making efforts to increase the production of brown coal, generally for the increased demand in the State for electric power, gas making, general industry, and railways. The railway electrification proposals will increase its electric power demand and the steam locomotive conversions contemplated will substantially increase its demands for brown coal dust.

Already the Commission has increased supplies of brown coal dust to the railways from 28 tons to about 70 tons a week. This has enabled the brown-coal-fired "X" class locomotive, hauling about 650 tons, to work about ten round goods trips each week, instead of four, between Melbourne and Seymour. Victorian Railways and S.E.C. engineers are now planning to make 60,000 tons of this fuel available in 1954 for 30 locomotives. They also envisage an ultimate railway demand exceeding 200,000 tons of brown coal dust a year.

The Victorian Railways will anticipate progressive increases in the supply of fuel by converting locomotives to burn it and by building additional tank wagons to bring the fuel from Yallourn and Morwell. Overhead re-fuelling bunkers are also being designed, and a prototype will be installed for trial this year.

If gas-turbine locomotives become a practical proposition in Victoria, it is probable that they will be fuelled by pulverised brown coal. Last year the Department, at the invitation of the Bituminous Coal Research Committee, of Baltimore, U.S.A., shipped four tons of Yallourn pulverised brown coal dust



Filling drums with pulverised brown coal for despatch to testing plant in the United States

there for testing as a possible fuel for firing such locomotives. The results were very encouraging and the fuel was found to give a combustion efficiency of 99 per cent. This is superior to results obtained from American bituminous coals tested for gas turbine locomotives.

The quantity of black coal consumed by the railways in the financial year ended June 30, 1951, was 393,952 tons. The State coal mines at Wonthaggi

raised 121,640 tons, which, except for a small local consumption, were used by the railways. Only 197 productive days, however, were worked during the year. Of the 38 days lost, 28, representing five-and-a-half weeks' production (15,000 tons), were lost through shortage of wagons due to the railway strike. For efficient working, the mines need 300 more men; without them, no substantial increase in production is possible.

MATERIALS POSITION IMPROVED FOR RAN-SOMES & RAPIER LIMITED.—Although material supplies throughout the year were difficult, since reinstitution of the allocations system for steel the position steadily improved, in the view of Mr. R. R. Stokes, Chairman & Managing Director of Ransomes & Rapier Limited, recently expressed at the annual meeting. Orders booked were some 50 per cent. above the previous year, despite long delivery dates, and output was slightly in excess of 1950. The balance of orders in hand at the end of the year represented approximately two years' output. The Rapier W.1400, the largest walking dragline in the world, (described in *The Railway Gazette* of November 23), started work in October. An order for another machine of the same capacity had been

received. Apart from material supplies, Mr. Stokes added, the most urgent problem was skilled manpower. The gap between the earnings of semi-skilled and skilled men should be widened so as to encourage the highest degree of skill.

CLOSING OF HORTON PARK STATION, N.E. REGION.—As the ordinary passenger train service at Horton Park, Bradford, is being run at a considerable loss, it has become necessary to withdraw it and close the station for ordinary passenger traffic on and from Monday, September 15, next. Facilities are being retained for dealing with special services for sporting events at the Park Avenue football and cricket ground. Intensive alternative bus services

for passengers are operated by Bradford Corporation Transport and the West Yorkshire Road Car Company. Parcels traffic will be dealt with at Bradford Forster Square, from which point a collection and delivery service will be operated by British Railways motors.

INCREASED AIR SERVICE FOR EDINBURGH FESTIVAL.—Additional flights between London Northolt, Edinburgh, and Glasgow will be operated by British European Airways from August 22 to September 7 in connection with the Edinburgh Festival of Music & Drama. From Mondays to Fridays there will be one extra service daily between London and Edinburgh. On Sundays the service will be extended to Glasgow, calling at Edinburgh en route.

Transformer Trolleys for British Railways

Designed with 135-ton capacity for conveyance of heavy electrical equipment

TWO special vehicles for the conveyance of heavy electrical transformers have been ordered by British Railways from Head, Wrightson & Co. Ltd. Each trolley comprises two main side beams resting on an equalising beam at each end which in turn is supported by two 6-wheel bogies.

Each side beam is detachable and two together are adjustable from a minimum of 6 ft. 11 in. to a maximum of 9 ft. between the flanges of the beams in multiples of 5 in.

Design Particulars

The beams are of fabricated construction in the form of a joist section comprising two web plates separated by

up to a maximum of 12 in. on either side to avoid obstructions during transit. This is operated from both sides of the vehicle through a screw and trunnion.

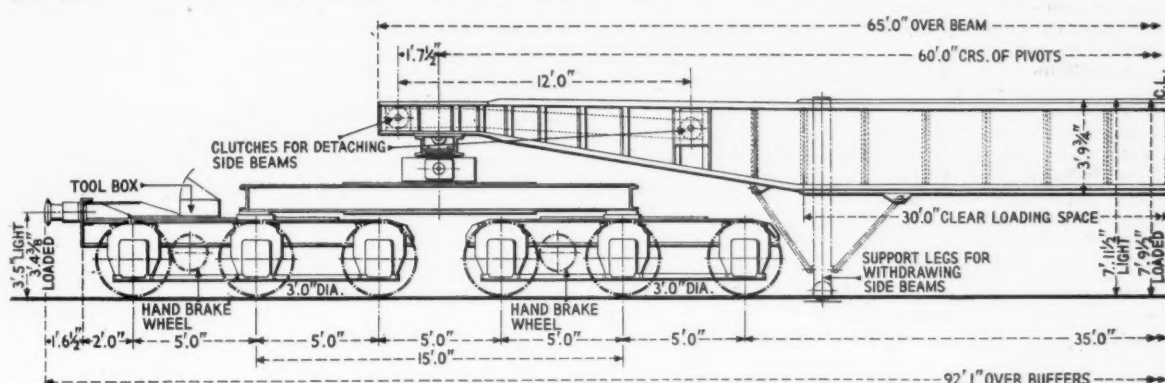
The side beam adjustment is also made by the separate top part of the structure which supports the ends of the side beams, running on steel rollers operated from the inside of the trolley through bevel gears to a screw and trunnions. Both beams open or close simultaneously. Steel centre-castings are incorporated in this structure and steadied by side friction-plates.

The weight is then carried on to an equaliser at each end which transmits the load from the side beams equally to the two bogies at each end. Steel

auxiliary bearing springs. Mild steel has been used throughout, and with the exception of the bogies, which are riveted, is of all-welded construction.

It is possible to jack up the transformer until the beams are relieved of its weight, remove one beam by means of detachable legs; the latter running on rollers over a temporary rail on ground level, and then draw out the transformer.

The trolley has a maximum clear loading space of 30 ft. long by 9 ft. wide and can carry a load of 135 tons concentrated on two points on each beam at 20 ft. centres, on three points at 30 ft. centres, or a distributed load of 120 tons over a length of 30 ft., or



Half-section diagram showing the principal dimensions

vertical rolled-steel joists and covered top and bottom by flange plates welded to the web. Both beams are secured at the ends to the end connection framework by means of cast-steel clutches, the framework being arranged with the adjustment for the main beams.

Each end connection unit is fixed to the top of a structure which contains the cross traversing gear and the side beam adjustment. The cross traversing gear allows the side beams, complete with the transformer, to be traversed on steel rollers running in an oil bath.

centre-castings and side friction-blocks are provided at each bogie centre. Sharp curves of $1\frac{1}{2}$ -ch. radius will be negotiable by this vehicle.

The bogies are 6-wheeled and of riveted construction built up of rolled-steel sections and plates, the wheels being 3 ft. dia. on tread and having 12 in. \times 7½ in. journals. The brake power is supplied by a screw brake operated from either side of each bogie, actuating two brake blocks on two wheels of each bogie. Laminated bearing springs are fitted, together with india rubber

a load of 100 tons distributed over a length of 12 ft.

The following are the leading dimensions of the trolley:—

Length over buffers ...	92 ft. 1 in.
Length over headstocks ...	89 ft.
Centres of side beam supports ...	60 ft.
Centres of equalisers and bogies ...	15 ft.
Width of each side beam ...	9 in.
Depth of side beam at centre ...	3 ft. 9½ in.
Minimum distance between side beams ...	6 ft. 11 in.
Maximum distance between side beams ...	9 ft.
Maximum width over trolley ...	10 ft. 6 in.
Height of side beams from rail (unloaded) ...	7 ft. 11½ in.
Height of side beams from rail (loaded) ...	7 ft. 9½ in.
Estimated weight ...	81 tons

CLOSING OF EASTERN REGION BRANCH LINES.—The Eastern Region announces that on and from September 15 the passenger train service will be withdrawn from the following stations and halts on the Elsenham and Thaxted branch: Mill Road Halt, Henham Halt, Sibleys, Cutlers Green Halt, and Thaxted. A bus service will be provided by the Eastern National Omnibus Company between Bishops Stortford, Elsenham, and Thaxted. Facilities for the handling of coal, merchandise and parcels traffic will continue to be available at Elsenham, Sibleys, and Thaxted Stations until further notice. On the same date the passenger service will be withdrawn on the Wroxham and County School branch line, affecting the following stations and halts: Coltishall.

Buxton Lamas, Aylsham South, Cawston, Reepham, and Foulsham. The Eastern Counties Omnibus Company will operate a bus service between Wroxham and Dereham. Railway Executive cartage services will continue to handle parcels traffic.

ROAD ACCIDENTS IN 1951.—Statistics published by the Royal Society for the Prevention of Accidents show that road accidents in Great Britain during the year 1951 resulted in 216,493 casualties, 5,250 killed, 52,369 seriously and 158,874 injured. Compared with 1950, this represents increases of 5 per cent. in the number killed and of 8 per cent. in non-fatal injuries. The upward trend of casualties in 1951 was closely

connected with the expansion of road activity which began with petrol rationing in May, 1950. The number of motor vehicles licensed was 4,296,000 at the 1951 annual census, compared with 4,070,000 in 1950. The pattern of road accidents in 1951 showed no marked differences from that for previous years; the more deadly nature of accidents occurring in darkness and on unrestricted roads was apparent. Although 1951 was the first complete year without petrol restrictions since 1938, and despite a considerable growth in the amount of road usage and the increase in the population of the country, road deaths in 1951 were still 21 per cent. fewer than in 1938, and injuries 7 per cent. fewer than in that year.

The River Wye Bridge at Chepstow

Two trusses, with 9 ft. dia. tubes, have required no renewal since the bridge was built

OPENING of the bridge carrying the Great Western Railway over the River Wye at Chepstow to single-line working on July 14, 1852, enabled trains to run through from Paddington to South Wales for the first time.

Although the three 100-ft. approach spans were re-girdered in 1948—as recorded in our October 1, 1948, issue—and the webs of the deck-carrying plate-girders of the 300-ft. span have been stiffened, the appearance of the bridge is much as it was when built, and indeed the great trusses are just as they were when Brunel erected them. There are two separate trusses, each carrying a single line of railway, and they are unique both in design and in the method used in erecting them. Each is an inverted queen truss and, though the 9-ft. diameter tubes forming the compression members were fabricated on the shore, launched across the river and hoisted up into position as complete units, the remaining parts of the trusses were built in position without any temporary support from below, a most unusual method for a simple span and one which has seldom, if ever, been repeated.

The work was sufficiently unusual to be described in the biography of the engineer, I. K. Brunel, written by his son.

The truss for each line consists of two suspension chains, one on each side of the track, hung from the ends of a horizontal circular tube, arched slightly for the sake of appearance, and resting on piers or portal towers rising about 50 ft. above the level of the rails. The pier at the land end over the natural rock abutment is of masonry, but the upper part of the mid-stream pier is of cast iron resting on cylinders. Each pier has two archways for the trains to pass through.

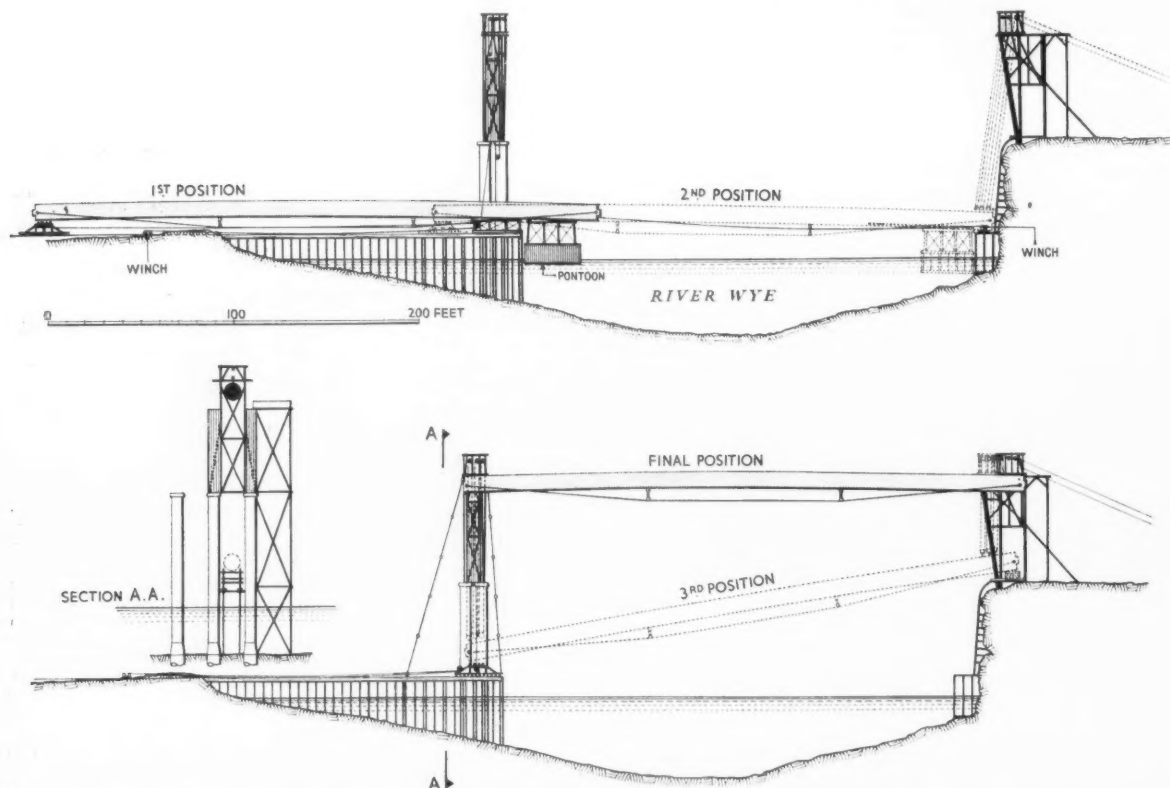
The chains carry the roadway girders at four points, and the tube is supported at two intermediate points in its length by upright standards resting on the chains. Thus, while the weight of the structure is supported somewhat in the same manner as in a suspension bridge, the inward drag of the chains is resisted by the tube. To prevent the framework from being distorted by unequal loading, it is made rigid by diagonal chains connecting the upper and lower ends of the two intermediate upright standards.

Due to the great depth of the truss, about 50 ft., or one-sixth of the length, the strains on the several parts are comparatively small for such a large span. The weight of wrought-ironwork in each of the trusses is 460 tons, inclusive of the longitudinal and cross girders, weigh-

ing 130 tons. At the points where the roadway girders are intersected by the inclined chains, they are not fixed to the chains, but rest upon them through the medium of rollers and saddles; at the ends of the short horizontal links in the middle of the span, there are screws for adjusting the level of the girders. These arrangements were made in order that the roadway girders might not be strained by the slight alteration in the form of the truss which takes place when a load comes on the bridge.

The continuous roadway girders are supported at six points. As the strains on continuous beams, supported at so many points, had not at that time been fully investigated, Brunel had the subject carefully examined both by calculation and by experiment, and was thus enabled to design the section of the girders to suit the strains at each point in their lengths.

As soon as the ironwork for the first truss was fabricated, it was assembled parallel to the river bank close to the site of the bridge. The ends were supported on temporary piers, and the structure was uniformly weighted with a load of 770 tons, or $2\frac{1}{2}$ tons per ft. run. In unloading it, the weight was taken off from one end of the truss, so



Diagrams showing the successive stages in the erection of the tubular compression member of each truss

as to test its strength when unequally loaded. After the tests had been satisfactorily completed, the trusses were taken to pieces, and preparations were made for erection at site.

The stipulation that river traffic should not be interrupted for any long period materially influenced the design of the superstructure. Accordingly, no scaffolding was required in its erection, nor was there any interference with the navigation for more than a single tide. The truss was made so that it could be divided into parts, each of which could be lifted separately and quickly. For the operation of lifting, Brunel used chain purchases worked by crabs. The tube was temporarily stiffened by portions of the main chains, arranged so as to form a truss, enabling it to carry its own weight when suspended by the two ends.

The preliminary operation of slewing the tube to its position on staging built out in shallow water at right angles to the river, was a work requiring a good deal of careful contrivance. When this had been accomplished, a pontoon, consisting of six wrought-iron barges was placed opposite the end of the tube, and all was ready for floating it across the river, *vide* "first position" on the accompanying diagram.

The floating took place on April 8, 1852. The tube had been rolled forward on two multiple-wheel trolleys till its end overhung the pontoon, and, as the tide rose, the pontoon floated with the end of the tube resting on it. In order to guide it in a straight line across the main channel, hawsers were anchored at points on the bank up- and down-stream, and were led to crabs on the pontoon, so that by hauling on either



Three-quarter end view of bridge showing in detail the chains, intermediate upright standards, and diagonal chain bracing of the central truss panel

hawser the tube was kept on its right course. As spring tides at Chepstow rise 40 ft., there is a rapid current except for a very short time.

The operation of drawing the tube across was commenced at a little after 9 a.m., and by 9.45 the pontoon had

(Continued on page 189)



General view of Chepstow Bridge showing approach and main spans

Relay Interlocking in Germany

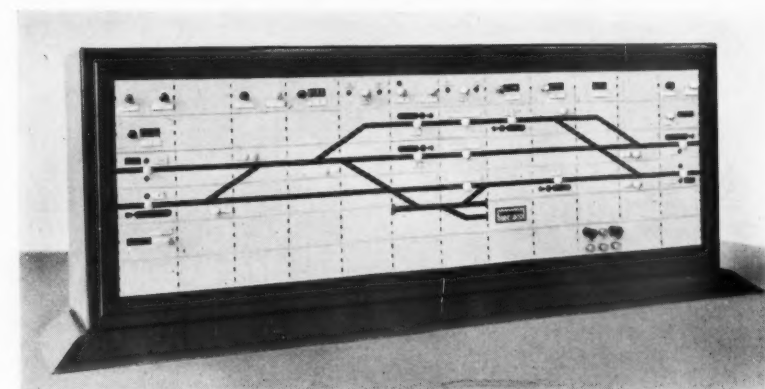
After a long experience of power interlocking, using several designs of lever frame, the German Federal Railways have adopted panel apparatus for new work

THE first power signalling installation constructed by a German manufacturer, the well-known firm of Siemens & Halske, was brought into use in 1894 at Prerau in Austria, to be followed soon after by one at Westend, Berlin, and from that time developments proceeded continuously. The system adopted was all-electric, and

of a circuit become faulty or have power applied to it irregularly. The point operating circuits had in addition to take care of the requirement, invariably enforced in German installations and adhered to in some other parts of Europe, that all points should be trailable without damage to them or the operating mechanism.

quently resulted in very long frames being required at the larger stations, and as they necessarily occupied considerable space in the controlling rooms in the signalboxes, attempts were made to reduce the length of the apparatus by mounting the handles in two or more rows. About 1930, therefore, new designs were worked out in which this could be done, the arrangement most generally preferred having the handles in four rows, projecting upwards from the top of the frame, which thus formed a desk, but in one design, constructed to the wishes of the Signal Department of the Netherlands Railways, no fewer than seven rows of handles were provided, enormously reducing the size of the frame proper. Many of these so-called "multiple-row" type locking frames came into use in German and foreign installations, a total of over 10,000 handles being supplied so arranged.

In every installation up to this time, including those provided by other German manufacturers, such as the A.E.G., mechanical interlocking had always been retained. Although the working of both the single and multiple-row frames was in itself all that could be desired, the wish arose, experienced already elsewhere, to do away with the mechanical and rely on electrical interlocking alone for controlling the movements of the operating handles, and still later to eliminate even that and perform all safety functions through various circuit combinations, under the control of relays, the handles remaining at all times free.



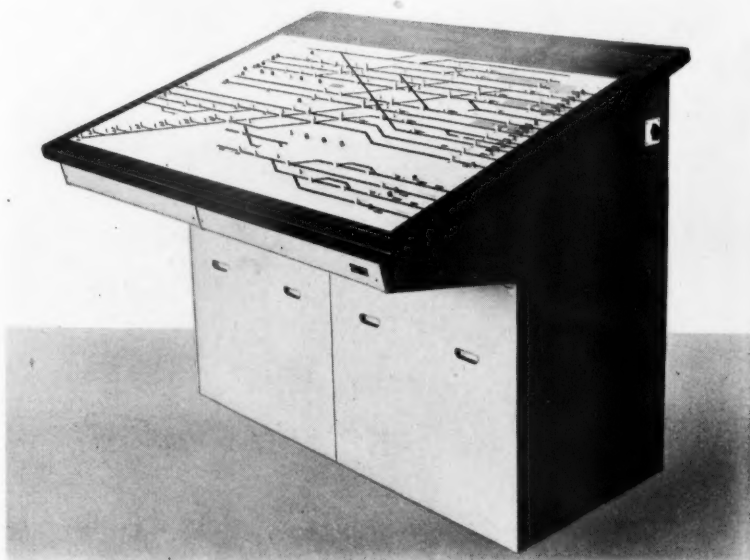
Vertical arrangement of a panel

although other systems came to be applied in Germany itself, the number of such installations remained very small. In 1901 the design of the power frames had reached a settled form, with the operating levers or handles, which had a rotary motion and not pull and push, as with the miniature levers favoured in Great Britain, arranged in a single continuous row. Such frames were delivered in large numbers to the railways of the various German States and also to lines in other countries, especially in Central Europe.

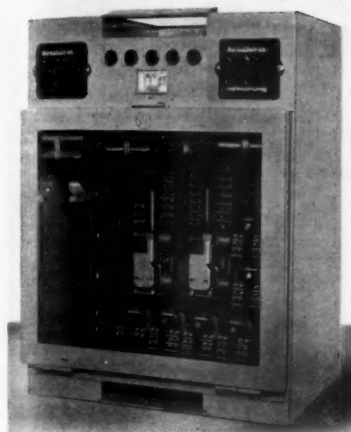
Except for alterations in the design of individual parts or modifications introduced into the circuit arrangements, which took place from time to time, this apparatus came to be regarded as standard and proved most popular over a large area. As with any such system, however, the use of a single row of operating handles fre-

Route Handles

At first it was customary to provide separate so-called "route handles" in addition to those operating the points and signals, as in the mechanical locking frames used in the German system of working, but in 1907 this practice was given up and the power frames came to resemble more nearly those seen in countries not influenced by German methods in these matters. In this 1907 type equipment, the handles, now become turn-knobs, were again arranged in one row and had mechanical interlocking between them. Several designs of signal and point machines had been produced as experience had been gained and the controlling and detecting circuits also had been through a very interesting evolution in the endeavour, made by power signalling engineers in all parts of the world, to achieve the maximum degree of security against false operation should any part



Medium sized desk panel apparatus



Group of relays in case

A design of electrically locked frame was developed during the last war and at Mülheim-Speldorf this was used in connection with freight train routes; passenger train routes remained controlled by handles having mechanical locking. Later on, however, all-electrically locked frames were supplied to Porta and Peenemünde stations, controlling all types of running movement.

Panel Apparatus Introduced

On the initiative of Dr. A. Dobmaier, Chief of the Signal Department of the Bundesbahn, with the assistance of one of his principal engineers, Dr. H. W. Sasse, the further step was taken in 1944 of designing an "all relay" panel apparatus, with the operating buttons arranged geographically on the track diagram, and an initial installation was brought into use at Düsseldorf-Deren-

dorf in the autumn of 1948. Other panels soon followed at Osnabrück, Walldorf, Landshut, Wiesbaden and many other places; nearly 60 installations are now at work.

Lineside Equipment

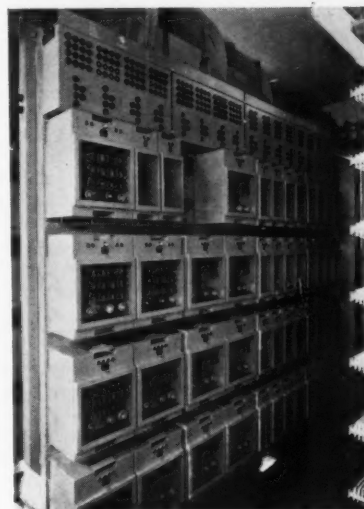
The lineside equipment used with these panels does not, of course, differ fundamentally from that used in earlier power installations but certain details deserve mention. Previously d.c. always was used for operating signals and points, but in these latest installations 3-phase a.c. is used for point operation and single-phase for the signals, now always colour-lights. Point machines are still controlled directly from the signalbox.

Track circuits also are fed by a.c. at 50 cycles frequency on lines marked by steam or d.c. traction, and at 100 cycles on lines worked by a.c. at 16½ cycles, frequently the case in Germany. The usual arrangement is to take power from a public supply and use a 60-volt trickle-charged secondary battery for the local relay circuits. If no second outside supply is to hand, diesel standby equipment, operating two generators, is provided. When 100-cycle power is essential for the track feeds there is a motor-generator in addition. The exact arrangement of such details necessarily varies, according to local conditions.

The signalbox equipment consists essentially of the actual control desk and the groups of relays which effect the interlocking and through which the operator actuates the lineside apparatus, and receives proof of its correct functioning. The desk is arranged to give him the various indications necessary for the proper control of the traffic. Special designs of relays have been produced and in all cases of circuit interruption two contacts, giving a double break, are used in series; one of these

can open correctly even though the other should be prevented from doing so. The correct opening of all contacts must occur before any that are required to close can do so.

The leading feature of the design consists in using an improved form of telephone relay engineering technique, intended to give the higher guarantees called for by railway signalling requirements. Considerable use is made of soldered and plug-in connections and a special form of contact, found by long experience to give the best results.

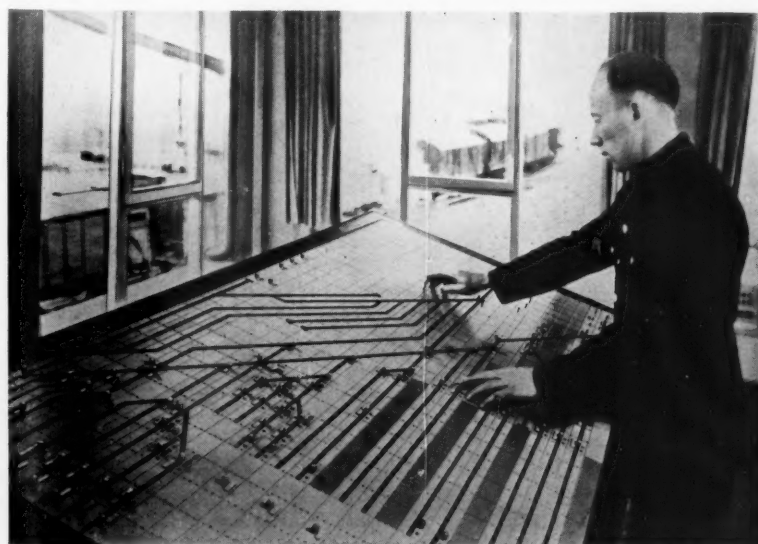


Signalbox relay room with mounted relay groups

A certain number of relays are of the self-latching type. The various groups are contained in glass-fronted cases, rendering the action of all contacts continuously visible and, from the nature of the case, certain standard sets of relays are used a number of times in one layout, being conveniently made up as plug-in units, the wiring of all being identical inside the case.

These arrangements have been specially systematised and standardised, enabling any layout of a station or yard to be accommodated on a uniform principle. The various sets of relays are wired up to a distribution board, from which the connections to the panel itself, to external functions and other signalboxes, are led away. Those required to run between groups of relays are also made there.

The panel itself usually takes the form of a sloping desk, on which all necessary indications for signals, points, track occupancy and any block or inter-signalbox controls are provided by lamps, together with the various push-buttons used to set up routes and effect any other signalling operation required. The assembly is made up of a range of standard panel sections which enable any layout of tracks to be reproduced at will. The arrangement of the controls is such that, in principle, no operation can be brought about merely by pressing a single button, in order to



Signalman operating buttons on panel to control a movement

prevent any accidental touch on one from actuating any equipment outside the signalbox. The signalman's intention must be clearly defined by his pressing two buttons simultaneously, the second being a group points or signal button, when such functions require to be worked individually.

The sections covering points on the diagram are lighted up to show the position of the tongues or whether they are in process of reversal and in the event of any discordance between their real and intended positions a warning alarm sounds after a certain predetermined interval.

Should points be taken trailing their section on the panel is at once illuminated by a flashing red light, indicating the incident very plainly. Steady red light denotes the points to be occupied by a vehicle. Electrically-released hand cranks enable points to be operated in a last emergency. If points are reversed but cannot complete their stroke the motor is prevented from running continuously on the clutch by a time control under which the operating current is not fed to the circuit for more than 6 sec. at each reversal.

Although points are operable individually, a complete train route can be set up by actuating simultaneously two buttons marking its commencement and termination on the panel. Clearing a signal is effected by operating its button, together with one or other of the route buttons according to the direction of movement it controls. A route once set up and locked becomes illuminated in yellow, but individual sections become red as they are successively occupied.

Signals are of course returned to danger automatically when a train reaches a predetermined point in advance. The yellow route lighting is extinguished when the route is released.

Sectional releasing is provided for busy locations. Intermediate buttons can be arranged on the panel to enable the setting up of routes also to be sectionalised. This facilitates shunting movements. The condition of all signals is continuously indicated by lamps. With the aid of an emergency group button any signal can be restored to the danger aspect in case of urgent necessity.

Supervisor's Panel

In many Continental countries it is the practice to have the work of the various signalboxes controlled or supervised by a higher official who is responsible for taking the principal decisions regarding the precedence of movements and other matters affecting the train running and in some cases the apparatus required for the purpose is quite extensive.

In the relay interlocking system here referred to, so-called supervisors' panels are provided. The station diagram is given in the usual way on the desk but the buttons serve to transmit the various orders as to the setting up of routes, etc., which the supervisor requires to give. The positions of the points are not indicated. By pressing the two relevant buttons the supervisor instructs the signalmen as to what route he requires them to set and on an additional track diagram, mounted on the wall in front of him, he can see, by

means of various illuminated indications, whether his orders have been carried out, together with any traffic conditions he needs to be acquainted with. For example, where train brake tests are carried out, an indication covering them is provided, with "train ready to start," "signal cleared for train," and other similar indications, such as train descriptions, or a sign indicating the near approach of a train. In this way the supervisor has a complete picture of the entire position in the area under his orders.

Results Achieved

The introduction of the panel apparatus has brought several distinct advantages over the frames previously used and has enabled the working of stations and yards to be simplified and accelerated. The size of the signalboxes also has been noticeably reduced and the system is therefore to be adopted in all new work.

It may be mentioned here that in addition to the ordinary power signalboxes controlling a limited area, the Bundesbahn has under construction a C.T.C. type installation between Nuremberg and Regensburg, a distance of 56 miles; this is expected to be in service in a few months' time. Between Bebra and Cornberg remote control with reversible line working is already in use. All the equipment illustrated in this article was constructed in the works of the Signal Department of Siemens & Halske A.G., Brunswick, Germany (20b), to whom we are indebted for photographs and technical information concerning it.

British Railways Dublin Inquiry Office



Interior of British Railways reconstructed premises at 15, Westmoreland Street, Dublin (see our April 11 and July 11 issues), showing the ample counter space. The office was fully reopened on July 7

Railcar Repair Depot at Bordeaux

Modification of former steam locomotive maintenance shops for railcar overhauls and inspections

WITH the growing use of railcars on the South-Western Region of the French National Railways, the problem arose of providing suitable workshops for their repair and maintenance. Of the three locomotive works available, only those at Bordeaux were suitable for modification to handle railcar work,

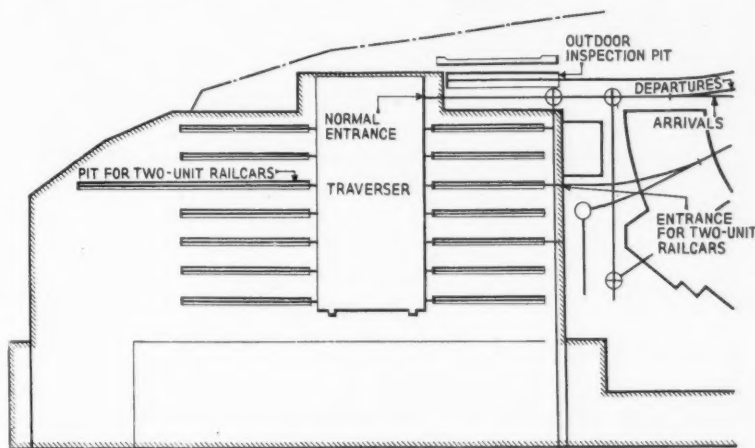
accommodating the two units of a Renault type "ABV" railcar without uncoupling, has direct access by rail from the outside tracks, and the same access road can be used as an additional outlet from the shop when required.

A new exit track has also been provided at the depot, connecting with the adja-

83 ft. 7½ in. long. The distance between the two rails on which it runs is 81 ft. 4½ in. A single three-phase, 220/380 V., 25-h.p. motor provides the motive power both for traversing across the shop and for towing railcars into position. Two speeds of traverse—98 ft. 5 in. per min. and 16 ft. 5 in. per min.—are available. Speed is checked by an electric and foot-braking system as the platform approaches the desired track. When correctly located, the platform is bolted in position by a system of levers operated from the driving cab.

Two mobile gantries serve each pit, running rails being provided alongside all pits throughout their length. The gantries are used for handling heavy items of equipment such as bodies and power units. General lighting of the whole workshop has been improved, and recessed fittings in the pit walls make it unnecessary to use inspection lamps.

An opening 38½ yd. wide had to be made in one wall of the assembly shop to enable the necessary distance of travel for the traverser to be obtained, and outside this opening a roofed extension was built over the end of the traverser pit. Erection of the traverser occupied five days. As its track was laid, the traverser was used as a mobile platform on which to erect the framework for the new bays of the building and also to transport railcars coming in for repair. In this way pits hitherto inaccessible to railcars became available even while construction work was still in progress and there was the minimum dislocation of the repair programme. The new steel-framed portion of the shop, built over the traverser, is in four 38 yd. bays and an end gable outside



Arrangement of pits at the remodelled depot, with access by means of traverser or a direct run-in

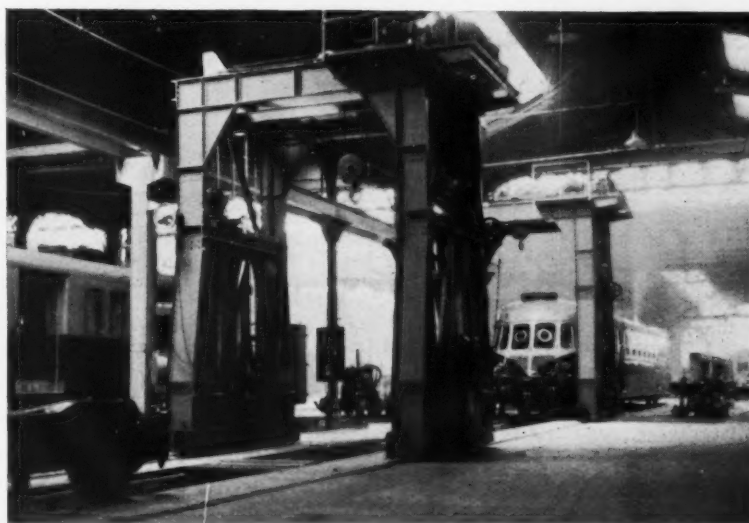
and to adapt even this depot necessitated considerable structural changes. Bordeaux provided some of the capacity required from the outset because of the progressive replacement of steam locomotives by the railcars, so that it was possible at once to devote two of the interior tracks to their new function. Meanwhile plans went ahead for alterations at the depot to enable its maximum capacity to be utilised. A scheme for this purpose was drawn up in 1937, but deferred by the war, and not finally approved until April, 1950. Work began two months later, and the remodelled depot has been brought into use recently.

An essential feature of the work has been the removal of the two existing traversers and their replacement by a single new machine measuring 83 ft. 7½ in. overall, which is able to accommodate the longest railcar units.

In the rebuilt depot, 14 inspection pits are available, all of which can be in use at the same time. Previously, although there were six tracks for railcars in the depot, they were equivalent only to five in respect of output, because of difficulties in placing vehicles in position and removing them after repair without disturbing other railcars in the shop. Normally railcars run over a new approach track on to the traverser at one side of the shop and are then conveyed into position for access to an unoccupied pit. One long pit, capable of

cent main running lines; a short spur leading to an inspection pit runs off this outlet and enables examination of railcars after trial runs to be carried out without returning them to the inside tracks of the depot.

The traverser will carry a maximum load of 75 tonnes and its platform is



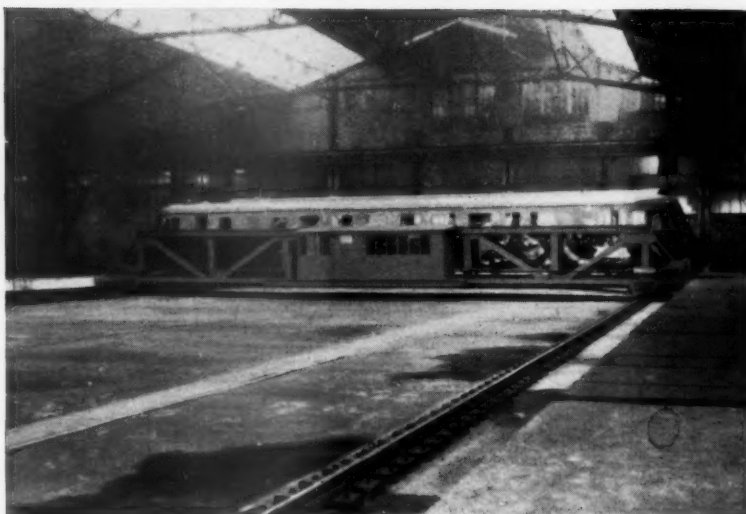
Rails for mobile gantries are laid alongside the pits, each of which is served by two gantries

the eastern wall of the building, the normal entrance for railcars being in this projecting section.

These changes at the Bordeaux depot have adapted it for dealing with 14 heavy repairs and six major inspections of railcars in a month. It is capable of handling all the maintenance requirements of a stock of about 120 vehicles.

Supplies of gas and compressed air are available throughout the working area, together with power points for portable electric tools. The machine tools are mainly drilling and grinding machines. Workbenches are located in each bay in line with the columns supporting the roof. The depot is well lit in daytime by large windows in the side walls and glazed skylights.

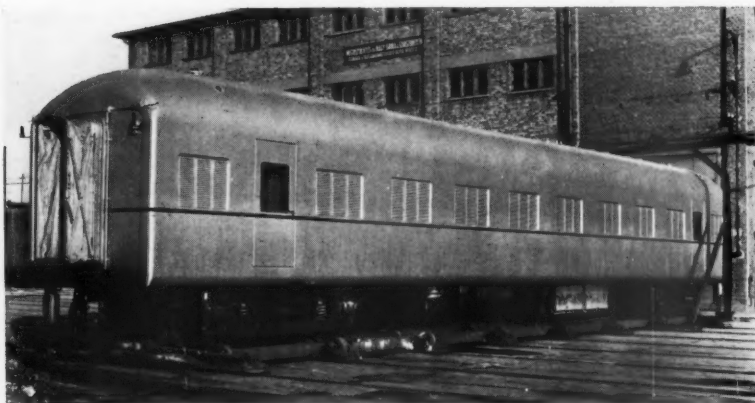
Various improvements were made in the installations retained from the former shop, such as deepening of the pits, improvement of their lighting to accord with the new standards, and provision of a new concrete floor in place of the previous rough paving.



A railcar on the new traverser serving all pits

Passenger Rolling Stock for Egypt

British equipment for vehicles built in Hungary



Second class steel coach, Egyptian State Railways, with steel venetian blinds in "raised" position

AN order for second class centre-corridor coaches and postal-luggage vans was completed a short time ago by the Hungarian Carriage & Machine Company at its Győr works for the Egyptian State Railways. Both types have a length over buffers of 76 ft., an underframe length of 72 ft., an overall width of 9 ft. 6 in., and a height of 14 ft. 2 in. Both types also have 45-in. wheels, 10-ft. bogie wheelbase, and 51-ft. 6-in. pivot pitch. Empty weight of the 64-seat second class coach is 44 tons, and of the postal-luggage vans 45½ tons. Both were specified to be suitable for a top speed of 87 m.p.h., and to go round curves of 395 ft. radius in sidings.

The passenger coach bogies are of the Pennsylvania compensated type with welded frames, and with SKF roller bearings. Car body and underframe are a

completely arc-welded integral structure of high-tensile steel, standard rolled sections and pressings being used where practicable. The roof sheets are of copper-bearing steel. Careful attention had to be given to providing adequate heat insulation and to preventing ingress of sand or dust. The insides of the outer steel panels and the underside of the steel floorplate are insulated with sprayed "Limpet" asbestos; the inside of the inner panelling and the ceiling is also sprayed with Limpet asbestos, faced with aluminium foil after drying. The flooring is faced with a layer of Induroleum covered by a 6-mm. rubber sheet.

The passenger saloon and end vestibules have inside panels of Formica, dark green below the waist line and light green above; a principal reason for the choice of this material was that it is

vermin-proof. The tops of the small tables between the seats are of fireproof and blister-proof Formica. Half of the passenger coaches have a refreshment bar with refrigerator and electric range; and the other half have an attendant's compartment.

Postal Vans

General body, frame, through draw-gear, and insulating construction of the postal vans is the same as that of the passenger coaches; but the bogies, whilst having the same wheels and wheelbase, are of the riveted plate-frame Sheffield-Twinberrow type, with Timken roller-bearing axleboxes.

There are separate post (including parcel post), luggage and perishable goods compartments, each of which can be loaded up to 2½ tons; and the postal section has a sub-division for sorting and classifying mail. In the perishable-goods compartment is a four-door steel container with "burglar-proof" locks operated only from the guard's compartment, for the carriage of travelling safes. Stone's 24-volt electrical equipment furnishes the interior lighting current and that for the tail lamps. Hardy automatic vacuum brakes are applied both to the coaches and the vans.

FOOTBALL SPECIALS IN SCOTTISH REGION.—For the opening games of the football season on August 9, the Scottish Region ran eighteen special trains. During last season over a thousand football specials were run by British Railways in Scotland. These trains carried more than 600,000 supporters to fixtures throughout Scotland. For the international match with England in April, 1953, over twenty special trains will run from Scotland to London.

RAILWAY NEWS SECTION

PERSONAL

TASMANIA GOVERNMENT RAILWAYS

Mr. C. G. C. Wayne, Deputy General Manager, Tasmania Government Railways, has been appointed an Assistant Commissioner of the Tasmanian Transport Commission. He has also been appointed General Manager of the Tasmania Government Railways in succession to the late Mr. A. K. Reid.

Mr. C. F. Fraser, formerly of the Institute of Public Affairs, Dalhousie University, Halifax, Nova Scotia, is now associated with the Canadian Pacific Railway in the capacity of economic consultant.

Mr. J. W. Porter, retired Chief Engineer, Canadian National Railways, was among those who arrived at Southampton last week on the Cunard liner *Scythia* from Quebec.

Mr. L. W. Lane, M.B.E., A.M.Inst.T., Deputy Chief of Transportation, Rhodesia Railways, who, as recorded in our August 1 issue, has been appointed Chief Superintendent of Transportation, joined the railways in February, 1921, as a station clerk at Gatooma. Before going to Rhodesia, he had served for 11 years in the Birmingham District Goods Department of the Great Western Railway. During his 31 years' service in



Mr. R. O. Stewart

Appointed Chief Engineer of the Canadian National Railways

Mr. R. O. Stewart, Assistant Chief Engineer, Construction, Canadian National Railways, who, as recorded in our July 11 issue, has been appointed Chief Engineer, graduated with honours in applied science at the University of Toronto. He joined the Dominion Bridge Company in 1910 and three years later became Assistant Bridge Engineer for the Canadian Government Railways at Moncton. After the organisation of the Canadian National Railways, Mr. Stewart was appointed Assistant Engineer of Standards, at Toronto, and later at Montreal. He served as Engineer of Bridge Standards, Assistant Structural Engineer, and Assistant Engineer of Bridges until 1942, when he was promoted to Engineer of Bridges. In May, 1951, he was appointed Assistant Chief Engineer, Construction. Important engineering projects Mr. Stewart has been associated with in recent years include the Montreal terminal development, the North Sydney and Port-aux-Basques deep water terminals and the Strait of Canso Causeway.

The Docks & Inland Waterways Executive announce that Mr. H. M. Mitton, formerly Assistant to the Docks Manager, Middlesbrough and Hartlepool Docks, has been appointed Docks Manager, Barrow and Silloth Docks.

Mr. F. Graucob, Managing Director of Nu-Swift Limited, has been elected Chairman, in succession to Mr. A. Harland, who has resigned. Mr. Harland has accepted the honorary post as President of the company. Mr. E. E. C. Cawood, General Manager, has been appointed Technical Director.

The following appointments in the London Midland Region have been announced:—

Dr. F. L. Davies, Assistant Medical Officer, to be Medical Officer of the London Area.

Mr. S. Lea, Assistant District Operating Superintendent, Liverpool (Lime Street), to be District Operating Superintendent, Barrow.



Mr. L. W. Lane

Appointed Chief Superintendent of Transportation, Rhodesia Railways

Rhodesia, Mr. Lane has been station-master at a number of stations ranging from Dondo, in Portuguese East Africa, in 1922, to Gwelo in 1934. He has also held District appointments at Salisbury, Livingstone and Broken Hill, and became Deputy Chief of Transportation in January, 1949. Mr. Lane, who is an Associate Member of the Institute of Transport, was awarded the M.B.E. in 1951.

Mr. L. de Wynter has been appointed Manager of the Ipswich Branch of British Insulated Callender's Cables Limited, in succession to Mr. A. R. Driessen, who has been appointed Commercial Manager of the Indian Cable Co. Ltd.

Mr. A. Robert Jenkins, Deputy Managing Director of Robert Jenkins & Co. Ltd., has been installed as President of the Institute of Welding for 1952-53. The new Vice-President of the Institute is Mr. H. B. Fergusson, a Director of G. A. Harvey & Co. (London) Ltd.



Mr. P. K. Reynolds

Appointed General Passenger Agent,
C.P.R. European headquarters



Mr. Edmond A. Grace

Appointed Research Officer to the General
Manager, Coras Iompair Eireann



The late Mr. John E. Rigby

District Goods Superintendent, Manchester,
London Midland Region

Mr. P. K. Reynolds, who, as recorded in our July 4 issue has been appointed General Passenger Agent for the Canadian Pacific Railway at its European headquarters in London, joined the company at Calgary, Alberta, in 1911, in the Department of Natural Resources, and later moved to Edmonton as Land Agent. He came to England in 1920, transferred to the Passenger Department and took the post of Travelling Passenger Agent in 1924. In this capacity he accompanied a number of important organisations and parties on tours across Canada. Between 1939-45 Mr. Reynolds served with the Royal Engineers' Movement Control Branch and was for some time a liaison officer to the American Forces. He returned to the Canadian Pacific in 1945 and was appointed Assistant General Passenger Agent. Since 1949 he has been primarily concerned with developing traffic for the Pacific services of Canadian Pacific Airlines.

Mr. J. Walker, a Director of the Morgan Crucible Co. Ltd., has been appointed to a seat on the board of Doulton & Co. Ltd.

Mr. J. J. Anderson, Transport Officer, Dunedin, New Zealand Government Railways, who, as recorded in our May 30 issue, has been appointed District Traffic Manager, Christchurch, began his railway career as a clerical cadet at Dunedin, was promoted to Stationmaster at Cross Creek in 1929. He returned to the South Island in 1931 as Stationmaster at Dunsandel, and subsequently was transferred to the Train Control Office at Christchurch. Following a seven-year period at Invercargill, where he was engaged in commercial and train-running work, Mr. Anderson was promoted in 1940 to Stationmaster, in charge of the then isolated Dargaville section. Three years later he was transferred to the District Traffic Manager's Office at Wanganui, and in 1945 was posted to the District Traffic Manager's Office at Dunedin as Train Running Officer. In 1947 Mr. Anderson was promoted to Assistant Transport Officer, and in 1949 he was appointed Transport Officer at Dunedin. During the first world war he served three and a half years with the New Zealand Expeditionary Force.

Mr. Edmond A. Grace, A.C.A., formerly Investigating Accountant, Coras Iompair Eireann, who, as recorded in our August 8 issue, has been appointed Research Officer to the General Manager, was educated at Blackrock College, Dublin. He qualified as a Chartered Accountant in January, 1943, when he was awarded the Gold Medal of the Institute of Chartered Accountants in Ireland. The following year, he was appointed Secretary of Cork Dockyard Limited, Rushbrooke, Cobh, Co. Cork, and acted as Manager of this concern for some months during 1945. He joined the staff of Coras Iompair Eireann as Investigating Accountant in September, 1946. Last year, he was a member of a European mission which studied cost control and management in the United States. The post of Research Officer will be concerned with the economic aspect of the Board's activities.

Mr. G. E. Godfrey has resigned his appointment as Joint Managing Director and Director of George Spencer Moulton & Co. Ltd.

Mr. F. A. W. Mann, formerly of the Overhead Line Section of the Electrical Engineers' Department—New Works & Development Section, Railway Executive, has taken up a position with Tubewrights Limited.

The Minister of Transport has appointed Mr. H. W. Davies, Divisional Transport Officer, National Coal Board, West Midlands Division, to be a member of the Transport Users' Consultative Committee for the West Midland Area, and Mr. C. F. Berridge, Divisional Transport Officer, National Coal Board, East Midlands Division, to be a member of the Transport Users' Consultative Committee for the East Midland Area. The Minister also has nominated Major R. A. B. Smith to be a member of the Special Panel of the Transport Tribunal, in succession to the late Mr. E. S. Shrapnell-Smith. Major Smith was a Director of Viney & Co. Ltd. (Preston) and of Lancashire Petrol Deliveries Limited until these companies were acquired by the British Transport Commission.

Mr. John E. Rigby, District Goods Superintendent, Manchester, London Midland Region, whose death we recorded briefly in our August 8 issue, began his railway career in 1906 as a clerk at Feniscowles. Seven years later he was transferred to the Bolton District Goods Manager's Office, where he served in various capacities. Mr. Rigby subsequently held appointments as Goods Agent at Todmorden and Moses Gate and in 1930 he served on various district and headquarters clerical and reorganisation committees. In 1933, he was transferred to the Manchester District as Assistant Agent for Accounts, returning to the Bolton District in 1935 as Goods Agent, Burnley, which position he held until April, 1938, when he was appointed Goods Agent, Preston. During his term of office at Preston he acted as a lecturer at the L.M.S.R. School of Transport at Derby. Mr. Rigby returned to the Manchester District in January, 1940, as Goods Agent, Oldham Road. In March, 1942, he became Operating Assistant to the Manchester District Goods Manager, and he subsequently held appointments as Assistant District Goods Manager, Bolton; Agent for Accounts, Manchester; and Assistant District Goods Manager, Manchester. He became District Goods Manager, Bolton, in 1947, and District Goods Superintendent, Manchester, at the beginning of this year. The funeral service was held at Egerton Congregational Church, near Bolton, on August 1. In addition to family mourners, among those present were the following:—

London Midland Region: Messrs. H. G. N. Read, Assistant Commercial Superintendent (also representing Mr. J. W. Watkins, Chief Regional Officer, and Mr. A. E. Hammett, Commercial Superintendent); J. B. Faulkner, Estate & Rating Surveyor; R. O. Banister, Divisional Operating Superintendent, Manchester (also representing Mr. S. G. Hearn, Operating Superintendent); C. G. Derbyshire, Divisional Signal & Telecommunications Engineer, Manchester (also representing Mr. S. Williams, Signal & Telecommunications Engineer); A. Dingley, Assistant Divisional Motive Power Superintendent, Manchester (also representing Mr. A. H. Madden, Divisional Motive Superintendent, Manchester); Dr. I. L. Waddell, Medical Officer, Manchester; Messrs. T. E. Jackson, Claims Assistant to Commercial

Superintendent; W. Swarbrick, Assistant District Passenger Superintendent, Manchester (also representing Mr. R. C. Flowerdew, District Passenger Superintendent, Manchester); W. E. Oates, Assistant to District Goods Superintendent, Liverpool (also representing Mr. T. C. Byrom, District Passenger Superintendent, Liverpool, and Mr. D. S. Inman, District Goods Superintendent, Liverpool); J. Hollingworth, District Goods Superintendent, Bolton; H. Shuttlebotham, District Goods Superintendent, Warrington; R. M. Davis, Assistant District Goods Superintendent, Manchester; A. Wood, Assistant Divisional Operating Superintendent, Manchester; A. Lloyd Owen, District Engineer, Manchester; H. Travis, District Estate & Rating Surveyor, Manchester; S. O. Screen, District Operating Superintendent, Manchester (Western); D. W. Ostle, District Road Motor Engineer, Manchester; A. T. Payne, District Road Motor Engineer, Blackburn; Inspector Jones, representing Mr. V. Berwyn Jones, Veterinary Surgeon & Horse Superintendent, Manchester; J. Burton, Welfare Officer, Manchester; A. Higham, Assistant District Goods Superintendent, Bolton.

Also among those present were: Messrs. O. T. Tewson, Solicitor, British Transport Commission; R. Paterson, Irish Traffic Superintendent, British Railways, London Midland, Scottish, and Western Regions; E. G. Garstang, District Goods Manager, Manchester, L.M.S.R., retired; G. H. Nutter, District Goods & Passenger Manager, Stoke, L.M.S.R., retired; L. C. Brittlebank, District Goods Manager, Birmingham, L.M. Region, retired; Mr. Dove, Secretary, North West Transport Users Consultative Committee (also representing Mr. T. J. Sales, Divisional Marketing Director, National Coal Board, N.W. Division, and Acting Chairman, North West Transport Users Consultative Committee); Mr. Babbs, District Manager, Road Haulage Executive.

Mr. R. B. Sawrey-Cookson has relinquished his post as Public Relations Officer of the British Road Federation and has taken up an appointment with the Esso Petroleum Co. Ltd. as Head of the Press and B.B.C. Section of the Public Relations Department.

We regret to record the death on August 6, at the age of 73, of Dr. Harold Ettrick Moore, O.B.E., M.B., Ch.B. (Manc.), late Surgeon to the Railway Accident Hospital, Crewe, and Acting Chief Medical Officer, L.M.S.R. He was a graduate of Manchester University (1904), and following a period of house appointments, General Practice in Worcestershire and active service in the R.A.M.C. from 1915-1919, in March, 1922, he was appointed Surgeon to the L.N.W.R. Works Hospital at Crewe, his old Chief, Sir William Thorburn, being at that time Consulting Surgeon to the L.N.W.R. He immediately began to develop and modernise the hospital, which undertook all the casualty work and traumatic surgery for the Crewe Works and other railway staff in the locality. From 1922 till his retirement in 1949 his life and work were dedicated to the care of the railway workers. He paid the strictest attention to detail and to the personal supervision of every case, even those of quite trivial injury, and obtained excellent results. Not only, however, did he serve the railway community by developing a first class traumatic surgical unit, but, appalled by the wastage and length of incapacity of many workman's compensation cases, he made these his special study, at first with a small number of cases with whom he tried his new ideas of active rehabilitation and movement. Later, convinced that his ideas were sound—and he was a man who

was not easily convinced—he persuaded the L.M.S.R. to build a special extension to the Crewe Hospital comprising a large gymnasium and physiotherapy rooms for rehabilitation treatment, where not only patients from the Crewe area but also from other parts of the railway system were accepted for treatment. This pioneering work on rehabilitation is not perhaps so well known as it should be due to Dr. Moore's modesty and shyness, but in the orthopaedic world it was recognised, and with the coming of war in 1939 Dr. Moore was appointed Civilian Adviser in Rehabilitation to the Royal Air Force and later to the Royal Navy. He played a vital part in developing the rehabilitation schemes for both these services, in recognition of which he was appointed Officer of the Order of the British Empire. After the war he continued in active practice as Surgeon to the Accident Hospital and in 1947 was appointed Acting Chief Medical Officer, L.M.S.R., retiring in 1949.

DR. HAROLD ETTRICK MOORE—AN APPRECIATION

Dr. H. E. Moore, of Crewe, was a man known to thousands of railwaymen throughout the vast system of the old L.M.S.R., and many hundreds of these will always remember him for the benefits they received from his surgical skill and personality, alone responsible for so many of them again becoming fully active long after (in some cases, many years) they had despaired of ever again using their limbs or backs which had been so severely injured.

His work as an orthopaedic surgeon and with rehabilitation is at long last recognised, but little acknowledgment was ever given to his great work for many many years, and of the frustrations he suffered only those who were close to him ever knew. In the early 1920s he was almost alone—he was in fact quite alone in the railway world—with his theories of remedial surgery and rehabilitation. Both management and men were strongly opposed to his views. That he won through is now history.

As a layman I can only marvel at all that he did. He was a man amongst men without fear or favour. As he worked, so he lived, demanding the best of all he came in contact with, and yet understanding their weaknesses. Forgiving nothing that was mean, he gave out strength to the weak, and was never more happy than when helping others, so long as it was unknown.

His uncanny sense of evaluating the characters of all he came in contact with was perhaps not an unmixed blessing. His dogged independent spirit was unfortunate, as with his extraordinary shyness, his life's work was made the harder in the difficulty of converting others to his views. How he worked only those near to him will ever know. Those of us who were privileged to be his friends realise what a loss the country has sustained, and for those friends the gap can never be filled.

R. A. R.

Mr. W. R. Watson, M.B.E., who, as recorded in our June 20 issue, has retired as Assistant to Commercial Superintendent, Traffic & Routes (Goods), Eastern Region, entered the railway service at Sleaford in 1902 and subsequently held positions in Lincoln and London. He served in the Forces from September, 1914, until March, 1919. He was appointed Goods Agent, North Woolwich and Silvertown, in 1938 and was transferred to the Goods Manager's Office, London, in 1940. From July, 1943, Mr. Watson was temporarily

located at Cambridge in liaison with the Regional Commissioners of the Ministry of War Transport, and returned to the Goods Manager's Office, London, in October, 1946, as Railway Liaison Officer of the Sugar Beet Corporation. He was also responsible for the acceleration of the release of wagons and the restrictions which had to be placed at various times on the flow of goods traffic through the Eastern Region. Mr. Watson was appointed Assistant to the Commercial Superintendent, Traffic & Routes (Goods), Eastern Region, in 1948.

Staff Training in Pakistan

Because of an acute shortage of experienced personnel in all services, particularly in the technical branches, the Pakistan Railways drew up a scheme, soon after their formation, for training supervisory staff in railway workshops in the United Kingdom and other countries.

The American Locomotive Company, which is manufacturing diesel-electric locomotives for Pakistan, has agreed to train staff in the operation and maintenance of diesel locomotives. A party of 15 officers and subordinates has been sent in three batches to the U.S.A. for twelve weeks' training. Two batches have already undergone training, and the third batch left for the U.S.A. on March 18. Special Class Apprentices (Mechanical Department) recruited before Partition are also being sent to the United Kingdom and the U.S.A. for advanced training. Four Special Class Apprentices began 18 months' training in the U.S.A. in March. Railway officers and subordinates are being sent to Japan for training and inspection during manufacture and assembly of the oil tank wagons ordered in that country.

Eleven officers have so far availed themselves of training facilities under the United Nations Programme of Technical Assistance, President Truman's Point IV Programme and the Commonwealth Consultative Committee (Colombo Plan); three are still studying in Canada and the U.S.A. Fifty officers will be sent abroad under the above schemes for advanced training this year, and in 1953. Four senior subordinates from the Signal Engineering & Bridge Engineering Department are also being sent to Australia for advanced training.

The River Wye Bridge at Chepstow

(Concluded from page 181)

reached the other side safely, and the tube spanned the river, as in the "second position" on the diagram. The work was carried out under the personal direction of Brunel, assisted by Mr. Brereton and Captain Claxton. As soon as the pontoon reached the further shore, the chains of the lifting tackle were attached to the tubes. The tube was lifted in the course of the day—one end at a time as shown in the "third position" on the diagram—to the level of the railway, and afterwards to its place on the top of the piers, when the suspension chains and the rest of the truss were attached to it. The second tube was floated in a similar manner to the first, and the bridge was completed shortly afterwards. The total cost of the work was £77,000.

Ministry of Transport Accident Report

Queen Street, Glasgow, November 14, 1951: British Railways, Scottish Region

Brigadier C. A. Langley, Inspecting Officer of Railways, Ministry of Transport, inquired into the accident which occurred at 3.13 p.m. on November 14, 1951, at Queen Street High Level Station, Glasgow, when the "A.3" class 4-6-2 locomotive No. 60100, running light, tender first, became out of control on the down gradient, which averages 1 in 43, between Cowlares and Queen Street and collided at about 25 m.p.h. with the middle of a rake of eleven empty passenger coaches, being drawn by a tank locomotive in the opposite direction through a scissors crossover. They had arrived on a train from Leeds and were being transferred to another platform to form the 4 p.m. express to Leeds.

The impact was severe; half the corridor side of the fifth coach was swept away and the sixth, a restaurant car, destroyed. Four members of the carriage cleaning staff and three dining car attendants were injured and taken to hospital; two of the attendants were detained. The extensive damage and difficulty of working in the confined space prevented normal working from being resumed for 16 hours. The weather was fine, but the tunnel from Cowlares was still filled with smoke from an up train; the rail surface was in good condition.

The outer home signals are divided into three groups worked by the same levers. There are colour-light repeaters 300 yd. inside the tunnel, colour-light stop signals 255 yd. farther on, and semaphore stop signals just north of the scissors crossover, the centre of which coincides with the tunnel mouth. The over-run from the colour-light stop signals to the scissors facing points is 416 yd. and to the point of impact 435 yd. Marker lamps are provided in the rear of those signals and of the semaphores to assist in locating them. The runaway was due to the failure of the vacuum brake on the light engine, which had been correctly accepted under the ruling local instructions; there was no violation of block working.

The locomotive was built at Doncaster in 1930 and had run 71,000 miles since last general repair. It was fitted with an ejector set for a working train pipe vacuum of 21 in. The driver's handle has three principal positions, "running," "brake off" or release, and "brake on" or full application. Applications of varying strength are made by moving it to intermediate positions between "running" and "brake on."

In the running position the small ejector maintains the vacuum in both the train and vacuum chamber pipes; the latter leads to the top of the engine and tender brake cylinders and the vacuum reservoir. In the off position of the handle the large ejector is brought into action. At "brake on" an air inlet valve allows air to pass into the train pipe. What is called the outer air valve then shuts communication between the train pipe and the small ejector and the small ejector maintains vacuum in the reservoir and tops of the cylinders. This valve, which, with others in the equipment, is operated by a cam, cannot be relied on to close by atmospheric pressure alone and is spring assisted. If not properly sealed when the main air inlet valve is opened air will find its way into the vacuum chamber pipe; the leakage probably will not be overcome entirely by

the small ejector, with serious effects on the working of the brake. A leak in the train pipe applies the brake but one in the vacuum chamber pipe tends to destroy its effectiveness.

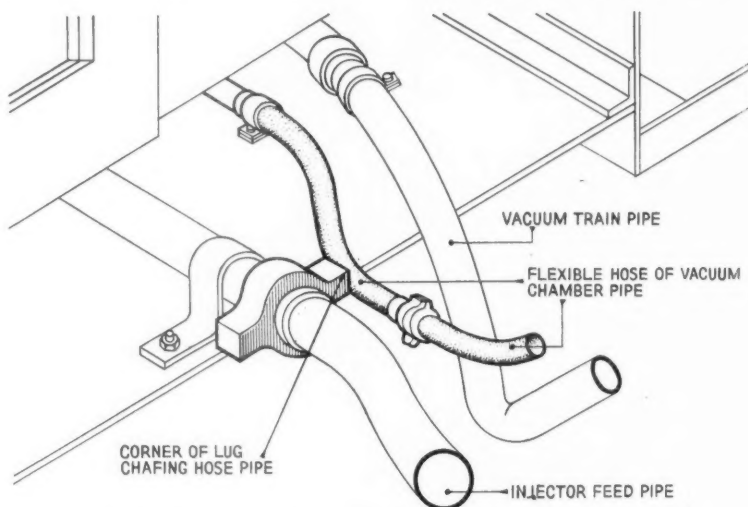
Evidence

The signalmen noticed the approach of the locomotive on the illuminated diagram but did not realise anything was amiss until it was nearing the directional signals, when nothing could be done.

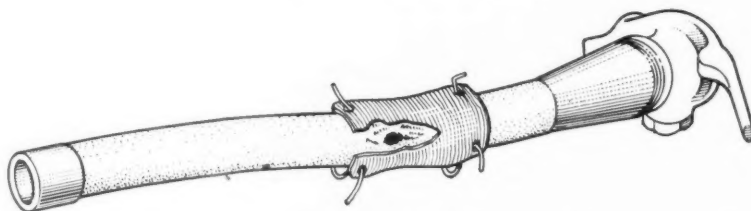
The locomotive, on which a district motive power inspector was riding, left Eastfield depot about 3 p.m. It was nearly

The handbrake was in good order but it could not be expected to stop the engine once it had gathered speed. The driver said he had tested the brake on taking over at the depot, using the customary procedure of creating vacuum and applying the brake fully, examining the travel of the piston rods, then creating vacuum again and testing for leaks. After 45 min. there were still 15 in. of vacuum in the chamber pipe and 7 in. in the train pipe; he had no reason to make any further test.

Examination of the locomotive later disclosed that the flexible hose of the



Showing vacuum chamber hose pipe rubbing against lug on injector feed pipe



Showing shield plate and hose worn through by rubbing, so admitting air wrongly to brake system

stopped at Cowlares advanced starting signal and up to that point no difficulty had been experienced with the brakes. The tender brake was by then screwed down. The driver said he was controlling the engine by making partial applications but felt the brake slackening just after passing this signal and noticed the needle of the vacuum chamber gauge had dropped to zero; speed was about 15 m.p.h. and increasing. Re-creating the vacuum and then dropping the handle to "full on" steadied the engine a little but the vacuum in the chamber pipe fell quickly and speed was regained. He tried again and reversed, but without effect. He applied no sand as the wheels were not slipping and, travelling tender first, sanders would have had little effect. This evidence was confirmed by the inspector.

vacuum chamber pipe between engine and tender had been rubbing hard against the corner of the lug on the injector feed pipe collar. This had apparently been noticed—although it proved impossible to ascertain anything on the matter—as a thin metal plate had been tied with copper wire round the flexible pipe. This proved of little use and a hole had been rubbed through the plate and the pipe, allowing air into the vacuum chamber system. Tests showed that on some occasions vacuum could be maintained in spite of this, but at other times the brake failed, suggesting that the hole could be closed by contraction of the hose pipe when the large ejector was working and be held shut thereafter.

When the ejector itself was tested it was found that an intermittent fault could prevent vacuum being maintained in the

chamber pipe after a brake application, and then it was discovered that the spring of the outer air valve was missing. Without it the valve might not in some circumstances re-seat itself when the brake was applied and air could then pass into the vacuum chamber system. It could not be discovered how this came about. The locomotive had been subjected to periodical brake tests as laid down in a circular on locomotive examination, and the ejector efficiency and vacuum gauge tests had been made daily, instead of every three to five weeks, on all East Coast and Carlisle No. 1 passenger and express freight locomotives, including this one, because of the severe gradients they worked over.

The locomotive also had been given the normal daily examination, similar to one described below, but no fitter made a report as to the hose pipe or the missing valve spring. The last such test was made the day before the accident. The fitter making it did not have to examine the hose pipe, however, and the engine examiner who went under the engine noticed nothing wrong with it nor saw the plate round it.

When the engine arrived at Eastfield Depot on the day of the accident an examining fitter made a rapid examination from a pit and noticed that the hose had the small plate round it, but did not examine it closely. It was an unusual thing, but he thought it was a protection against wear. He thought the pipe was clear of the feed pipe collar but it did not occur to him to examine more carefully; he realised that a leak in this pipe would be dangerous. On the previous day he had noticed the plate. That afternoon a fitter's assistant, acting as brake block fitter, attended to the brakes and found gauge readings and other matters satisfactory, but did not examine any pipes, for which he was not responsible.

The last brake valve examination had been made on October 4 but the ejector air clacks were not extracted and it is not known whether the outer valve spring was missing then. The vacuum hose was not changed but it was examined again on October 23, when the engine and tender were separated. The fitter concerned was confident that the hose was then in good condition, although there may have been slight marks on the canvas covering; and he was positive there was no plate around it, nor, he believed, was it fouling the feed pipe. He gave reliable evidence and it can be assumed that the plate was put on later.

All vacuum-braked locomotives in the Scottish area were inspected after the accident and it was found that on five other "A3" class locomotives based on Haymarket the flexible pipes had been rubbing against the feed pipes. Apparently none had been noticed and no action had been taken regarding them. Checking of repair cards showed that in the four weeks October 18 to November 14, 39 reports had been made about brakes by drivers, of which 26 were requests for adjustment, on No. 60100, which had been operating mainly between Edinburgh and Carlisle, a line well known for its severe gradients. Brake adjustment is almost a daily requirement and little significance need be attached to this constantly recurring item.

Of the other 13 defects seven referred to leaks in the vacuum system. Although they had been attended to neither the missing spring nor worn pipe was discovered. The last such report was on November 18, when the driver booked "vacuum to examine: chamber dropping when brake applied," and a fitter said he had difficulty in creating a vacuum in the small

ejector, only obtaining 17 in. He found a bad leak through the release valve, which was choked with cotton waste; he cleared that out and the brake worked satisfactorily.

The Haymarket shedmaster said that the fitters responsible for ejector and gauge tests did not go under the engines; they would not be expected to see if any connecting pipes were rubbing. Engine examiners, on the other hand, should have noticed the worn hose before it caused failure. The fitter was expected to look at all moving parts, not only the brake system. No special emphasis had been placed on examination of vacuum pipes and he thought the examiners had not considered any rubbing pipes bad enough to need changing. Action should, however, have been taken and their position altered to ensure that no rubbing could occur. (Special instructions have now been issued.)

He was surprised that the plate on this engine had not been noticed. The vacuum chamber pipe was vital and the engine should not have been allowed out in such a condition. It would take at least a week to wear through plate and pipe; the former might have been worn through some days before the accident. The valve spring might have been lost when the valve was taken out, either by the fitter doing repairs, by enginemmen interested in the working of an ejector, or during a demonstration to a class. If missing on October 4 that should have been noticed, but unfortunately instructions had been misread and the air clacks were not extracted. This mistake had now been rectified. The number of defects against the brake of this engine was rather high but not unusual, considering the route it ran over. Had he seen the number of entries he would have ordered a special examination of ejector and brake equipment.

The District Motive Power Superintendent at Edinburgh also considered the defective pipe should have been noticed and the engine in no circumstances sent out in that condition, but did not regard the defects booked as particularly heavy. In the light of events the booking of leaks in the vacuum system was excessive, but these defects were not unusual. Repair cards from outlying depots might take a little time to reach the home shed and the mechanical foreman might not see them all together when looking through the engine dockets. If an engine was giving constant trouble of a particular kind the foreman should see if the repairs had been properly attended to and could then form some idea as to cause.

Inspecting Officer's Conclusion

The driver had given the brake a particularly severe test with remarkably good results before leaving the depot and had no reason to anticipate a failure, for which he was in no way to blame. The signalmen at Queen Street were quite in order in allowing the empty train through the cross-over after accepting the engine, a movement specially authorised because to prohibit it would unduly restrict shunting and cause serious delays during busy periods. The 435 yd. overrun should have been quite sufficient. Main responsibility for the accident rests on the supervisory staff of Haymarket Depot for allowing the engine to leave with the flexible pipe so badly worn and liable to cause complete brake failure. The pipe probably was in reasonably good condition when last coupled up on October 23, but clearly was set too close to the injector feed pipe. It required only the lug on the connector to

be hit into a horizontal position in the course of tightening it for severe rubbing to take place. Evidently some unknown fitter noticed this and instead of renewing the pipe or altering its position tied the thin metal plate on the worn part; then severe rubbing wore that away.

It is surprising that the serious condition of this important pipe was not noticed by any fitter, but this aspect of brake inspection seems not to have been properly appreciated, for similarly worn pipes were found on other engines. The examining fitter at Eastfield should have noticed this defect. He saw the plate and recognised it as an additional protection against wear but did not check it. By placing his hand on the pipe he would have found the trouble. Brigadier Langley doubts whether the spring being missing from the outer air valve would have caused complete failure of the brake. Inrush of air from a full application probably would have sufficed to re-seat the valve and, for the same reason, the defect might not reveal itself during a test, when a full application is usually made. The driver adopted that method and the valve must have been closed under atmospheric pressure. Loss of such a spring is almost unheard of and extremely difficult to detect, but it should have come to light if periodical examination of valves had been properly carried out.

Remarks

Prompt steps were taken to examine all locomotives with vacuum brake on engine and tender and attention was directed to the importance of checking the position of all flexible pipes. The layout of these on the "A3" class and other engines similarly equipped also has been redesigned to preclude the possibility of contact between pipes. These alterations will be made at periodical overhaul, and should prove effective but general instructions about tests and examinations are of very little use unless there is proper supervision. In this case leaks in the vacuum system were reported on seven occasions in four weeks, in addition to numerous requests for adjustment; although each individual defect was apparently attended to the real cause of the trouble did not come to light.

Under the present system repair cards, on which are recorded the action taken by maintenance staff, are the only records of defects booked by enginemmen; it is difficult for the mechanical foreman, during daily examination of some 200 or 300 cards, to find out whether the same defect is being booked repeatedly against any particular engine. He has to rely largely on his general experience, his knowledge of the engines and drivers at his depot and reports from men under his charge, reinforced by periodical examination of individual engine dockets, which contain the repair cards for the last 2 or 3 months an engine has been in service. This routine failed to reveal the booking of leaks on No. 60100 and Brigadier Langley considers that more attention should be paid to this aspect of maintenance supervision.

LIVERPOOL OVERHEAD TRAFFICS.—During the first two weeks of July traffic of the Liverpool Overhead Railway improved by £243 and £337 to £3,174 and £3,089, respectively, though there were declines in receipts in the following fortnight. As a result of these later setbacks aggregate traffic at July 27 were higher by £6,411 at £86,024, as compared with £7,065 at £76,731 on July 6.

Time-Speed Control of Wagon Retarders

At the Air Line Yard, Milwaukee, the Chicago, Milwaukee, St. Paul & Pacific Railroad has laid as nearly complete units what are believed to be the first wagon-retarders with time-speed controls. The installation was briefly recorded in the overseas columns of our August 8 issue.

By this method of control the operator in the control tower can restrict to one of six speeds a wagon or rake of wagons leaving the retarders. The complication is that from 28 to 30 different track circuits are required within the length of the retarder. They are provided by dividing up one rail into short sections each 3 ft. 1 in. long, connected with special insulated joints 5 ft. in length. As the other running rail is of 132-lb. section, the track-circuit rail is of 115-lb. section to allow for the thickness of the base of the insulated joint and insulating fibre inserts, and so give the same rail level.

Each of the insulated lengths of rail regulates the pressure of the retarder shoes on the sides of the wheels. When the control is set for a certain speed at which the wagon is to leave the retarders, and the wagon enters the first track-circuit length at a greater speed, the second track-circuit will detect that the leading wheel of the wagon has not been on the first track-circuit long enough, and so will apply pressure to the retarder shoes. Similarly, the third track-circuit section will detect whether speed over the second is still too fast and if necessary apply further pressure. By then the following wheel will be causing the second section to react, and when all the wheels of the wagon or rake are on the retarder, the speed will thus be reduced to the desired figure.

"Golden Arrow" to be Retimed

The most important change in the Southern Region Continental services for the winter of 1952-53, effective from October 5, is the retiming of the southbound "Golden Arrow" to leave Victoria at 1 p.m. (2 p.m. until October 25) instead of at 11 a.m., and its running in connection with the late afternoon Folkestone to Calais instead of the midday Dover to Calais steamer. The northbound "Golden Arrow" will continue to connect with the afternoon steamer from Calais to Dover.

The Southern Region points out that the new departure time from Victoria, approximating to that from Paris Nord, will enable businessmen to spend the morning in London, lunch in the train to Dover, and dine between Calais and Paris. The "Golden Arrow" between Victoria and Dover Marine will continue to consist of first and second class Pullmans only; in France, the corresponding trains will include first and second class Pullman cars besides ordinary coaches and a restaurant car. The new timings will require only one "Golden Arrow" set to work between Paris Nord and Calais Maritime, instead of two as at present.

Southbound, the 10 a.m. (11 a.m. until October 25) service from Victoria will reach Paris Nord via Dover/Calais at 6.8 p.m. instead of 5.52 p.m.; first and second Pullman cars will be available by this service between London and Dover. In connection with the Folkestone/Calais steamer, a train will leave Victoria at

12.30 p.m. (1.30 p.m. until October 25), besides the "Golden Arrow" at 1 p.m. (2 p.m.); passengers via Folkestone/Calais will reach Paris Nord at 9.34 p.m.

Northbound, the 8.15 a.m. service from Paris Nord via Calais/Folkestone will operate basically as at present. Besides the "Golden Arrow" from Paris Nord at 12.30 p.m., the 11.50 a.m. train from Paris will continue to run in connection with the Calais-Dover steamer; passengers by the all-Pullman "Golden Arrow" from Dover Marine will reach Victoria at 6.30 p.m.

(7.30 p.m. until October 25) and those by the ordinary boat train at 6.50 p.m. (7.50 p.m.).

Other Southern Region winter Continental services will be the "Night Ferry" nightly via Dover/Dunkirk; the Newhaven/Dieppe day service, daily; two services each way daily to and from Belgium via Dover/Ostend; and the Southampton/Havre service, thrice weekly, with departures from Waterloo on Mondays, Wednesdays, and Fridays, and from Paris St. Lazare on Tuesdays, Thursdays, and Saturdays.

Railway Ship Model for Antwerp Museum

Presentation by Lord Hurcomb

On July 26, as briefly announced in our July 25 issue, Lord Hurcomb, Chairman of the British Transport Commission, presented to the National Marine Museum in Antwerp a model of the former L.N.E.R. steamship *Antwerp*. Lord Hurcomb was welcomed by Mr. Van Put, Senior Alderman of the City of Antwerp, who accepted the gift in the absence of the Burgomaster. The model of the ship was reconditioned in Antwerp, where it had been held during the 1939-45 war, before presentation. It was placed in the Salle Leys at the Town Hall for the ceremony.

The ss. *Antwerp* was one of the three vessels built in 1920-22 to replace losses in the Great Eastern Railway fleet suffered during the first world war. The ship was delivered by the builder, John Brown & Company, of Clydebank, in May, 1920, and was in use on the Harwich-Antwerp service from that date up to September, 1939. She was a vessel of 2,960 gross tons, 330 ft. in length, 43 ft. in breadth, and 20½ ft. in depth; speed was 21½ knots; accommodation provided for 339 passengers and 58 crew as well as for cargo and cattle.

In the early days of the war the ss. *Antwerp* was used first to house men of

the Royal Navy at Harwich, later as a troopship from Southampton, and in June, 1940, to bring home troops from St. Valery and Le Havre. Later in the same year the ship was taken over by the Royal Navy and used mainly in the Mediterranean.

After the war the vessel served as a troopship, carrying men to and from the British Army on the Rhine via Harwich and the Hook of Holland. In 1950 she was laid up, and finally sold for breaking up in 1951.

The model of the ship was made shortly after the vessel itself. It was owned by the Great Eastern Railway, later by the London & North Eastern Railway, and finally by British Railways, and at various times has been exhibited at a number of points.

INSTITUTE OF TRANSPORT PRESIDENTIAL CHAIR.—A presidential chair has been installed in the council room of the Institute of Transport. The Chair, which was made by Green, Vardy & Co. Ltd., commemorates the Secretaryship of Mr. A. Winter Gray, 1923-41.



Lord Hurcomb with Alderman Van Put of the city of Antwerp beside the model of the SS. "Antwerp"

New Western Region Exchange at Swindon

Installation serving works, offices, and two stations

On July 20, a new automatic telephone exchange was brought into use at Swindon Works, Western Region. Five manual positions are also provided. Planning and installation work had occupied over four years. Past experience had shown how important a part cleanliness plays in the satisfactory working of the complicated and delicate apparatus of an automatic exchange, so that a specially-designed building has been erected to house the equipment.

In the basement of this building the whole of the air supply for all rooms is filtered and cleaned, humidity is controlled, and temperature kept within chosen limits. Freshness is assured in the rooms occupied by operating staff by means of ozonating apparatus. The effectiveness of the filtration plant was demonstrated by the amount of dirt extracted from the air during two months' trial run before the exchange was opened.

The exchange installation, which serves the whole of Swindon Works and Offices and the Junction and Town Stations, replaces two small manual switchboards. It is equipped with 700 extensions (650 of which are in use) and has an ultimate capacity of just over 1,100 lines. Eleven Post Office lines are provided (6 for incoming and 5 for outgoing calls). Direct railway trunk lines are available to Paddington (2 lines), Reading, Didcot, Birmingham, Gloucester, Newport, Neath, Bristol (2 lines), and Westbury. Thirteen omnibus circuits are also connected, serving approximately 200 stations and signal boxes.

Intercommunication calls are dialled direct, but incoming and outgoing Post Office trunk and local calls, incoming and outgoing railway trunk calls, and incoming and outgoing omnibus circuit calls are dealt with through the manual side of the switchboard by dialling "O." Two teleprinter machines maintain telegraphic communication between Swindon, Paddington, and Bristol.

The Exchange equipment was supplied by the Automatic Telephone & Electric Co. Ltd., and the cabling was installed by British Insulated Callender's Construction Co. Ltd., under the supervision of Mr. A. W. Woodbridge, Signal & Telegraph Engineer, Western Region.

Design and construction of the building, installation of electrical supply plant, air conditioning plant, and other amenities in the establishment were carried out under the direction of Mr. R. A. Smeddle, Mechanical & Electrical Engineer, Western Region, Swindon.

Contracts & Tenders

The Crown Agents for the Colonies have recently placed the following contracts for the East African Railways & Harbours:—

Birmingham Railway Carriage & Wagon Co. Ltd.: 430 bogie low-side wagons.

Cravens Railway Carriage & Wagon Co. Ltd.: Tanganyika Section: 35 bogie cattle wagons, complete with bogies; 10 bogie cattle wagons, without bogies.

Metropolitan-Cammell Carriage & Wagon Co. Ltd.: Tanganyika Section: 45 bogie high-side wagons fitted with vacuum brake. Kenya & Uganda Section: five bogie flat wagons; 175 bogie high-side wagons (90 of which are to be fitted with dual vacuum and air brake).

Hurst, Nelson & Co. Ltd.: Kenya & Uganda Section: 110 bogie covered goods wagons.

G. R. Turner Limited: 100 four-wheel high-side goods wagons.

M. & W. Grazebrook Limited has recently received a contract from the Shell Group for 36 bogie tank wagons, of approximately 10,000 gal. capacity, for use on the Nigerian Railway.

The seats of the first class coaches for the Girardot-Tolima-Huila section of the Colombian National Railways have been

upholstered in Dunlop Rubber Co. Ltd. Dunlopillo. The 600-h.p. diesel coaches, seating 80, were supplied by D. Wickham & Co. Ltd., and Cox & Co. Ltd. was responsible for the seating.

The French National Railways have placed an order for 26 Budd-type stainless steel coaches, for use in the North and South-East Regions, with Societe des Etablissements Carel, Fouché et Cie, S.A., Paris. The new coaches, delivery of which is to be at the rate of one a week until the end of the year, consist of eight first class, ten first and second composite and eight seconds. Length over buffers is 76 ft. 7 in., overall width is 9 ft. 8 in. and the tare weight is 33 tonnes.

EDGAR ALLEN & CO. LTD.—The directors of Edgar Allen & Co. Ltd. propose to increase the authorised ordinary share capital from £500,000 to £1,200,000, to provide for possible future capital needs. For the period April 1, 1951, to March 29 last, the dividend is raised from 12½ per cent. to 15 per cent. and the bonus doubled at 5 per cent.—a total of 20 per cent. against 15 per cent. Trading profits rose from £547,549 to £860,366, which is attributed to a total turnover considerably greater than in any previous year. Subject to Treasury consent, a one-for-one scrip bonus is proposed. This will necessitate capitalisation of £430,945, of which £424,901 will be appropriated from general reserve and the balance from E.P.T. postwar refund account.

CARTYNE STEEL CASTINGS COMPANY.—The North British Locomotive Co. Ltd. has purchased the whole of the issued share capital of the Carntyne Steel Castings Company of Renfrew. It is not the company's intention to make any change in the policy of the previous management, whereby castings are supplied to any other companies who are interested in its products. The directors who have been appointed to manage the affairs of the company are Messrs. J. B. Mavor, Chairman, T. A. Crowe, R. Arbuthnott, and J. Gibb, General Manager.



Manual operating position in the new exchange at Swindon



Racks of selector equipment

Staff & Labour Matters

Engineers' Wage Claim

The rejection on August 31 by the Engineering & Allied Employers' National Federation of the claim by the Confederation of Shipbuilding & Engineering Unions for a general increase of £2 a week was followed by a parallel rejection by the Shipbuilding Employers' Federation, on August 6, of the C.S.E.U. claim for a substantial increase for shipbuilding workers.

The C.S.E.U. executive council decided to put before the Confederation conference on August 13 an emergency resolution proposing further talks with the employers on the rejected claims. The resolution was stated to have the support of all members of the executive, including leaders of the Amalgamated Engineering Union and other unions which had intended to call for a strike ballot; it expressed profound dissatisfaction with the rejection of the claims.

Notes and News

U.S.A. Rail Strike Averted.—Railway Union leaders have cancelled a strike they had called earlier for Monday on the New York Central east of Buffalo. They accepted a Mediation Board plea to postpone the stoppage over wages and working conditions.

British Railways Coal, Iron and Steel Carriages.—British Railways carried 159,859 tons of iron and steel during week ended August 2, an increase over the corresponding week last year (155,626 tons). The total clearance of coal by rail during the fortnight ended 6 a.m. on August 11, was 3,890,310 tons.

Runaway Train on Romney, Hythe and Dymchurch Railway.—A train on the 15-in. gauge Romney, Hythe and Dymchurch Railway became out of control on August 11 when the driver was knocked partly unconscious after striking his head against a bridge. A passenger crawled along the top of the coaches to the locomotive and managed to stop the train.

Merstone-Ventnor West Branch Closing.—The 6½-mile branch between Merstone and Ventnor West, Isle of Wight, will be closed to all traffic on September 15. The intermediate stations and halts are: Godshill, Whitwell, and St. Lawrence. The line opened throughout on June 1, 1900, and the last to be built in the island, was promoted by an independent company, but worked by the Isle of Wight Central Railway which later absorbed it.

Snowdon Mountain Railway Travellers Marooned.—Some 120 travellers on the Snowdon Mountain Railway had to spend the night of August 11-12 in the hotel at the summit after two trains in which they had gone up were unable to descend because the line was blocked by the wreckage of an R.A.F. plane. By the time the line was cleared the gale had risen to such a height that it was considered unwise to attempt the return journey. A relief wagon was hauled to the summit with supplies for the stranded passengers.

London (Eastern Region) Staff Railway Society.—The London (Eastern Region) Staff Railway Society has been formed. In addition to the usual programme of visits to railway and similar installations, it is hoped to run an information service to assist members with technical, historical,

and other railway queries. A reference library of books, pamphlets, photographs, and manuscripts is to be built up, from which members may borrow on short-term the volumes needed for their research. The Honorary Secretary is Mr. R. L. Eastleigh at London Fields Station (Eastern Region), who will supply particulars of membership and activities.

Institution of Locomotive Engineers.—Mr. C. M. Cock will deliver his Presidential Address to the Institution of Locomotive Engineers on Wednesday, September 24. The meeting will be held at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m.

Cinque Ports Carriage Panels.—A striking series of five carriage panels, showing the Cinque Ports, Hastings, Sandwich, New Romney, Hythe, and Dover, has recently been produced by the Southern Region Public Relations & Publicity Department. The panels, which are from water colours by Mr. Jack Merriott, are for display in main line and suburban rolling stock.

Portrush Council Plans to Rent Train.—Discussions have been held between Ulster Transport Authority officials and members of Portrush Council on the council's request to rent a train in an effort to provide of Portrush Council on the council's request. The meeting was adjourned to enable the Authority to give further consideration to the matter. Mr. J. W. Hutton, Chief Traffic Manager, U.T.A., assured members of the council that the Authority would do everything possible to promote the interests of Portrush.

Delays Through Flooding in London Area.—The storm in and around London in the evening of August 6 caused considerable delays through flooding in the London Midland and Southern Regions and on London Transport Underground lines. Flooding of a cutting through which L.M.R. Western Division electrified lines pass between Willesden Junction and Harlesden caused a northbound Bakerloo train to be held up for some hours; passengers were rescued by firemen; fire pumps were used to clear the floodwater, but normal running through the cutting was not resumed until the afternoon of August 7.

New London Transport Bus Map.—A new folder map for the Central Area, incorporating for the first time both bus and trolleybus services, has been issued by the London Transport Executive. Of the same overall size as the previous edition, the new map contains 93 more routes; the large-scale Central London section has been enlarged and now extends as far south as Wandsworth and Dulwich. It covers 1,000 sq. miles and contains the names of 2,500 places served by 369 bus and trolleybus services on some 1,750 miles of route. In addition, connections with country bus services are shown, as well as London Transport railways and stations.

Manchester-Sheffield-Hull and Denbighshire Rail Tours.—The Stephenson Locomotive Society, North Western Area, and the Manchester Locomotive Society have made arrangements for a Manchester-Sheffield-Hull special train on August 24, which will travel from Manchester Central via Chinley and Sheffield Midland to Cudworth, then over the main line of the Hull & Barnsley Railway to reach Hull. From Manchester to Cudworth the last of S.W. Johnson's Belpaire 4-4-0 engines, No. 726, will haul the train and from Cudworth a North Eastern "R" class 4-4-0 locomotive

of Wilson Worsdell's design will be in charge. On September 6 the Western Region is providing a special auto train for a visit to the Frith, Minera and Rhos branch lines from Wrexham. The train will leave Wrexham General at 3 p.m.

Withdrawal of Passenger Services from Hellesdon Station.—On and from September 15, the passenger service will be withdrawn from Hellesdon Station, Eastern Region. Alternative facilities for passengers and parcels are available at Norwich Thorpe and City Stations and there are frequent bus services in operation in the district.

Containers for Conveying Baths.—A method of packing porcelain-enamelled cast-iron baths, devised by the Commercial Superintendent, North Eastern Region, in collaboration with Ideal Boilers & Radiators Limited, was described in our July 25 issue. Container DX.608 has been overhauled and repainted for demonstration at Greenford to the British Bath Company. It is available for demonstration to any firm which contemplates using them on application to the Commercial Superintendent, British Railways, North Eastern Region, York.

Opportunities for Private Airlines.—It is announced by the Air Transport Advisory Council that applications may be submitted by airline operators to run scheduled services and inclusive tours. The Ministry of Civil Aviation has stated that independent companies and the corporations will alike be eligible to apply for the right to develop new routes not "reserved" to the corporations and all new types of scheduled services. Independent companies will be able to apply for long-term rights to provide services which do not materially divert traffic from B.E.A. internal services. No subsidies will be granted to companies obtaining rights to operate scheduled services "within the sphere of opportunity now presented."

Franco-Crosti Boilers for British Railways.—The Railway Executive has announced that experiments are to be made in this country with the Franco-Crosti boiler, which has been tried successfully on the Continent and is claimed by its Italian inventor to achieve considerable fuel economy. The Franco-Crosti boiler is to be fitted to 10 class "9" 2-10-0 heavy freight locomotives of a new standard design, which are to be built under the 1953 locomotive building programme. The design is such that the engines can be fitted with either these, or the orthodox type of locomotive boiler, with only slight modification. The boilers will be built by British Railways under licence from Franco-Crosti Locomotives.

F.B.I. Latin-America Mission.—The British Engineering Training Mission to Latin-America, consisting of Sir Arthur Fleming, Chairman of the Federation of British Industries Overseas Scholarships Committee; Mr. F. R. Livock, member of the F.B.I. Overseas Scholarships Committee; and Mr. W. V. Jenkins, who administers the F.B.I. Overseas Scholarships Scheme, has recently completed its tour. The Mission, which was referred to in our April 11 issue, left England on April 29 and visited Colombia, Venezuela, Cuba, Mexico, Peru, Chile, Argentina, Uruguay and Brazil. The main purposes were, firstly, to investigate the technical training arrangements for young engineering graduates in these countries, with a view to providing a selected number of them with scholarships for

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is exempted from the provisions of the Notification of Vacancies Order, 1952.

WANTED "Diesel Railway Traction." May 19, June 16, December 29, 1933; February 23, September 7, October 5, December 28, 1934; April 19, 1935; April 17, 1936. Good prices offered. Write Box 534, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

FOR SALE. Hangar (all steel) 113 ft. clear span \times 135 ft. long \times 25 ft. clear height at eaves, rising to 35 ft. clear at apex. Doors each end (gable optional). Steel Building 111 ft. 6 in. span over frames (101 ft. 4 in. clear) by 216 ft. long by 16 ft. (extensible to 26 ft.) to eaves. Large doors in sides or ends as required. Hangar (all steel) 80 ft. clear span \times 144 ft. long \times 22 ft. clear height at eaves, rising 32 ft. at apex. Doors one end. Steel building 80 ft. clear span \times 144 ft. long \times 22 ft. clear height at eaves. Large sliding doors in sides. Curved steel building 35 ft. span \times 17 ft. 6 in. high at apex. Up to 600 ft. long (low price).—BELLMAN HANGARS LTD., Terminal House, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The commercial timbers, their qualities and uses, tools and working equipment, are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Methods. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

practical training in Britain and, secondly, to make known the exceptional practical training facilities which Britain can offer. A full report of the findings of the Mission will be published in the near future. Sir Arthur Fleming said the economic progress of the young Latin-American republics depended very largely on the work of the engineer to provide facilities for transport, communication, power supply and for general development.

British Railways to Use Self-Issuing Ticket Machines.—A new machine for issuing platform tickets, which works on the same principle as the G.P.O. stamp machine, has been adopted for use on British Railways. The machine holds a spool of 1,000 perforated tickets. When a coin is inserted a ticket is forced out of a slot to be torn off by the purchaser. An initial order is being placed with Hall Telephone Accessories Limited, for 130 of these machines to replace existing machines that are no longer serviceable.

German-built Coaches for the Commonwealth Railways of Australia.—Reports which appeared in some newspapers on August 10 and 11 quoted German sources as saying that 18 coaches awaiting shipment from Bremen to Australia were for use as a Royal train. The coaches, which are air-conditioned and form two nine-coach sets, were in fact ordered by the Commonwealth Railways of Australia for ordinary service on the Trans-Australian line between Kalgoorlie and Port Pirie and were not intended specially for Royal use. The order was placed with German builders in 1950, as British manufacturers were not at that time able to put forward an offer because of pressure of work.

Firth Brown Tools Limited.—The Chairman of Firth Brown Tools Limited, Lord Aberconway, presiding at the annual general meeting on July 25, said that the accounts for the year 1951-52 showed, before taxation, the large profit of £533,822—a considerable increase over last year's profit and a result of very active trading conditions, with the temporarily advantageous circumstances of raw material stocks and rising prices. Much of the increased demand had resulted from customers purchasing stock against further price increases or from rearmament. The year had also again been successful in export turnover, some of the markets for which, however, recently, following control by overseas Governments, become much more restricted. It was proposed again to allocate £75,000 to contingency reserve. Taxation absorbed £373,000, or 70 per cent. of the total profit. Provision for excess profits

levy, the greatly increased raw material prices, and high taxation, had made it necessary for them to borrow £474,500 from John Brown and Co. Ltd., which owned all the ordinary stock and had also during the year subscribed for a further £50,000 of ordinary stock. The company had spent £129,438 on capital account during the year, and the outstanding capital commitment at the end of the financial year amounted to £99,000. The report was adopted.

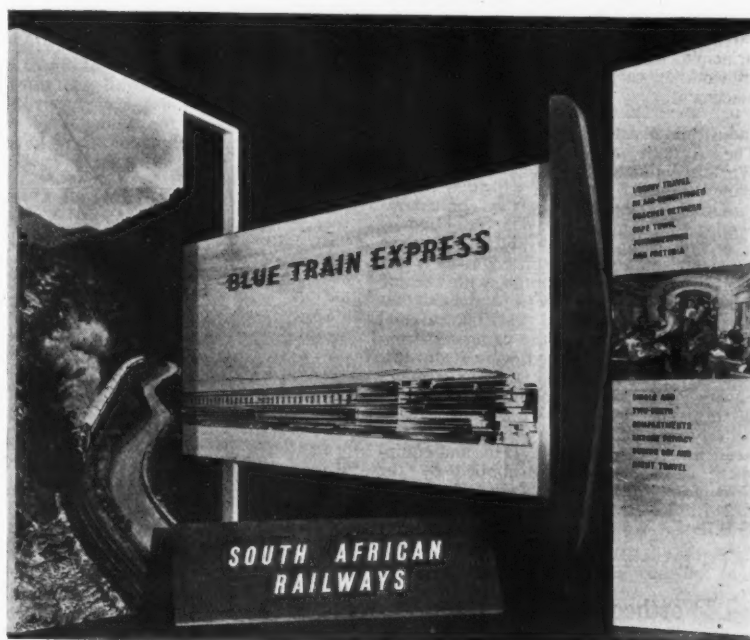
British Railways Zoo Poster.—An attractive coloured poster showing a group of animals and birds has recently been produced by the Western Region to publicise the zoos at Paignton and Dudley. The poster, which shows great attention to detail and is in a form which should especially appeal to children, is from a painting by Mr. Raymond Sheppard. So that the poster may be used by other Regions, a number of copies has been dis-

tributed in which only the pictorial section has been printed and the requisite lettering is added by individual Regions. The Southern Region is displaying the poster at its stations to advertise Chessington Zoo, and reference is made to the combined rail and admission tickets available, as well as to the various attractions of the Zoo.

Price of Zinc Decreased.—On August 8, the price of good ordinary brand zinc was lowered from £130 to £118 per ton delivered consumers' works.

East Indian Railway Company.—Presiding at the 105th annual general meeting of the East Indian Railway Company on July 23, the Chairman, Sir William Elderton, said the deficit on the management account for the half-year ended March 31 was £1,065, and had been met out of the separate assets fund, which would be available to meet winding up expenses after February, 1953,

The S.A.R. "Blue Train"



A window display at South Africa House, London, featuring the "Blue Train" of the South African Railways

with any balance available for distribution among annuity holders. The accounts showed that £290,338 of new money with £228,215 in respect of sales of existing investments became available for investment during the half-year. This was used to buy £123,000 of National War Bonds, 1952-54, and £19,117 of their own annuities—rather more than the average amount of annuity purchased latterly. The report and accounts were adopted.

Charles Roberts Results.—A final dividend of 10 per cent. is to be paid on the ordinary stock of Charles Roberts & Co. Ltd., making 20 per cent. less tax for the year ended March 31 (compared with a dividend of 20 per cent. less tax for the preceding year plus tax-free payment of 5 per cent. from realised capital accretions). The consolidated net profit was £96,902 (£110,917) after deduction of £189,141 (£189,548) tax and £26,467 (£27,029) depreciation, with £271,903 (£248,665) carried forward.

New Jetty for Goole Shipping.—With the approval of the British Transport Commission, the Docks & Inland Waterways Executive is to provide a new concrete jetty, at a cost of £175,000, at Blacktoft on the River Ouse, for the mooring of vessels proceeding to and from Goole Docks. The new jetty, which will replace an old wooden structure, will be 654 ft. long, 35 ft. wide and have a mean depth of 15 ft. at low spring tides. In providing an important aid to navigation the facilities will assist the turn-round of vessels at Goole Docks. Commencement of the work will be subject to obtaining parliamentary powers and to the approval of the Minister of Transport.

Flexible Transmissions.—Laycock Engineering Limited will again be exhibiting in the accessory and component section at the Commercial Motor Show and the Motor Show. Built into the general stand design will be a number of the Layrub patented flexible propeller shafts used extensively at home and abroad. An electrically-operated demonstration unit will show clearly the three chief characteristics of the Layrub principle, namely, radial flexibility, ability to work at varying angles, and axial displacement.

Industrial Waste Eliminators Limited.—The fortieth anniversary of Industrial Waste Eliminators Limited, of 7-11, Old Bailey, London, E.C.4, of which Mr. Alan P. Good is Chairman, was celebrated recently; the company was incorporated as a private company on July 16, 1912, to carry on the business started seven years earlier by Mr. Jean Schmidt, who became the first Managing Director and held that post until his death in 1945. The original machines marketed by the company, from which its name is derived, were steam turbine-driven centrifugal extractors for recovery of lubricating oil from engineer's waste. The first machine installed for a railway was put into service at the Gateshead Laundry, N.E.R., in 1916, and equipment subsequently was supplied by the firm for railway works at Doncaster, G.N.R., Gorton, G.C.R., and Stratford, G.E.R.

Forthcoming Meetings

August 16 (Sat.).—Permanent Way Institution, Manchester & Liverpool Section. Visit to Vulcan Foundry Limited, Newton-le-Willows.

Railway Stock Market

Stock markets have been rather more active, and although best levels were not held, most sections were higher on balance. Sentiment was affected by a disposition to await developments in the higher pay claim by the engineering unions. British Funds reflected the general tendency and came in for moderate profit-taking after earlier gains, as did engineering and allied shares; these recently were in demand because of the scope in the industry for expansion in export trade. Later, however, renewed buying was in evidence. Engineering and kindred shares are being favoured in many cases because yields still seem attractive and there are good prospects of dividends being maintained.

Larger supplies of steel in due course should mean increased profits; and although because of the effect of E.P.L., this will not bring higher dividends in the future, sentiment as to engineering shares should be helped and, taking more than a short view, they should give reasonable scope for capital appreciation.

As German and Japanese bonds have claimed the limelight among foreign securities, business in foreign rails has been on a limited scale. Where changed, movements were mostly in favour of holders.

The main feature has been a revival of activity in Manila Railway debentures, which have attracted on the view that they will be worth well over current market prices if there is a reasonable settlement in regard to the holding of Manila Railroad bonds, which comprises virtually the company's only asset. The "A" debentures have risen to 83 and the "B" to 73, and there has also been speculation in the preference and ordinary shares which have been up to 10s. 3d. and 2s. 10½d. respectively.

San Paulo 10s. units weakened to 12s. 9d. after the annual report and chairman's statement, which points out that the claim for £3,788,386 compensation for capital put in the railway since 1901 has been rejected. The company's claim for a review of this decision is now under consideration, though it is expected it will be some time before it is presented to the President of Brazil for a final decision. Meanwhile, as already announced, £379,044 has been received in respect of the claim for rolling stock, and so on, and the shareholders are to have a

further return of capital as a result. Activity in the United of Havana stocks has quietened down, awaiting further news from Cuba; the 5 per cent. debentures were easier at 15½.

There were minor fluctuations in Antofagasta stocks with the ordinary changing hands around 12 and the preference around 54½. Taltal shares at 16s. failed to benefit from the report that a further increase in traffic rates has been granted. Nitrate Rails shares were 19s. Brazil Rail bonds were quoted at 6½, and Leopoldina Terminal debentures at 20½.

Canadian Pacifics at \$65½ failed to hold best levels, and the preference stock at 63½ also eased, but the 4 per cent. debentures held firm at 76½. Calgary & Edmonton 4 per cent. debentures marked 75½ and Ontario & Quebec 5 per cent. debentures 94½.

A minor feature has been some speculative buying of Russian railway bonds, possibly as a result of the recent revival of activity in Roumanian and other Iron Curtain bonds, though there is no expectation of Russia ever recognising her pre-1918 obligations. Black Sea-Kuban 4½ per cent. bonds have marked 7s. 6d. and Russian South Eastern Railway 4½ per cent. bonds 6s. 3d.

In other directions, Dorada Railway ordinary stock was quoted at 37½d. Nyasaland Railways 3½ per cent. debentures were quoted at 73.

Engineering shares failed to hold best levels, but were higher on balance where changed. Thornycroft were 51s. 3d., Babcock & Wilcox 69s. 7½d., John Brown 43s. 6d. xd., and T. W. Ward 71s. 3d., but Ruston & Hornsby at 37s. 7½d. lost a small part of their recent advance, sentiment reflecting the chairman's reference in his annual statement to the steel shortage which prevents full benefit being derived from the company's record order book. Guest Keen eased to 51s. 4½d. Tube Investments were firm at 54s.

Elsewhere, Beyer Peacock were 27s. 9d. and Hurst Nelson strengthened to 47s. 6d., though North British Locomotive have been easier at 16s. Vulcan Foundry were 22s. 6d., Birmingham Carriage 32s., and Gloucester Wagon 10s. shares firmed up to 12s. Wagon Repairs 5s. shares were 12s. and Charles Roberts 5s. shares 20s. 1½d.

Traffic Table of Overseas and Foreign Railways

Railway	Miles open	Week, or month ended	Traffics for week		No. of week	Aggregate traffics to date	
			This year	Inc. or dec. compared with 1950/51		Total	Increase or decrease
						1951/52	
South & Cen. America	Antofagasta ...	800	1.8.52	£ 143,160 + £ 1,570	31	£ 4,745,750 + £ 1,082,800	
	Costa Rica ...	281	June, 1952	c1,452,498 + c330,908	52	c15,851,340 + c4,551,217	
	Dorada ...	70	June, 1952	33,098 — 3,445	26	199,714 — 14,046	
	Inter. Ctl. Amer.	794	June, 1952	\$1,009,607 — \$23,367	26	\$6,944,168 + \$12,517	
	Paraguay Cent.	274	1.8.52	G506,174 + G179,481	5	G2,122,271 + G583,868	
	Peru Corp.	1,050	July, 1952	\$9,506,000 + \$1,581,000	4	\$9,506,000 + \$1,581,000	
	" (Bolivian Section)	66	July, 1952	Bs.16,387,000 + Bs.3,358,000	4	Bs.16,387,000 + Bs.3,358,000	
	Salvador ...	100	May, 1952	c153,000 + c15,000	48	c1,899,000 + c32,000	
	Taltal ...	122	June, 1952	\$2,062,000 + \$387,000	52	\$28,040,000 + \$7,495,000	
	Canada	Canadian National†	23,473	June, 1952	19,061,000 + 1,419,000	26	110,335,000 + 10,582,000
	Canadian Pacific...	17,037	June, 1952	13,073,000 + 927,000	26	74,042,000 + 5,050,000	
Various	Barsi Light* ...	167	June, 1952	28,162 — 2,077	13	94,987 — 17,190	
	Gold Coast ...	536	June, 1952	266,795 + 19,579	12	918,158 + 112,909	
	Mid. of W. Australia ...	277	May, 1952	60,051 + 4,504	48	637,944 + 183,863	
	South Africa ...	13,398	12.7.52	1,989,585 + 61,654	15	29,179,537 + 1,349,561	
	Victoria ...	4,744	Apr., 1952	2,010,674 + 217,273	43	— —	

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1